Railway Age

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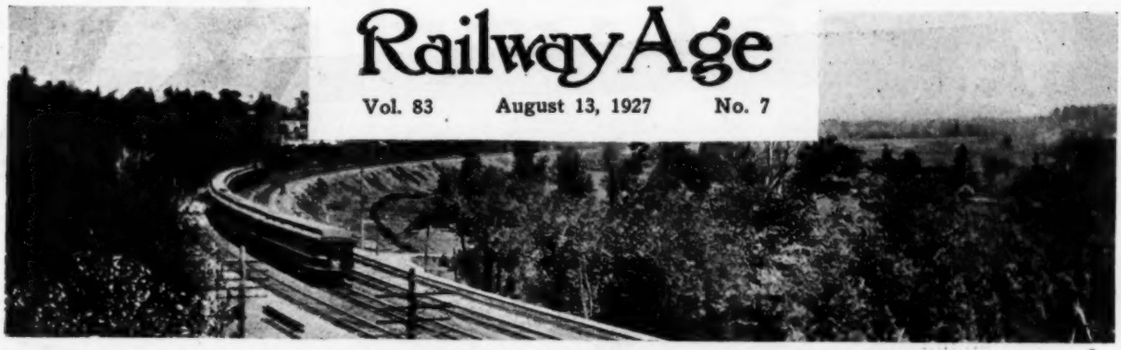

On the B. & A. near Weston, Mass.

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One of the 40 Western 30-yd. Apron Cars recently purchased by the Western Pacific R.R.

Western Pacific Chooses Western Dump Cars

After a thorough test and investigation, the Western Pacific R. R. chose Western Apron Air Dump Cars as part of their equipment in their betterment program.

These cars will be used in bank widening, ditching, and the general work of putting the roadbed in shape for heavy traffic.

Western cars are built to meet the exacting needs of railroad maintenance-of-way. In them are combined sturdy construction and the more important refinements of design that give complete protection of ballast, ease and speed in dumping, low air consumption, clean dumping, and other well known Western features.

May we explain in detail?

WESTERN WHEELED SCRAPER COMPANY

Builders of Dump Cars

AURORA Western **ILLINOIS**

Railway Age

Vol. 83, No. 7 August 13, 1927

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How to Teach

WALTER S. BERRY, director of training of the Scovill Manufacturing Company, recently made an address before the Production Executives' Conference of the American Management Association on reducing production costs through training old and new workers. Among other things he mentioned a special course on "How to Teach" that his company had given to all those men in charge of apprentices. One of the foremen who took the course stated after its completion that "he used to give jobs to his men and think, because he told them what to do, that was sufficient. As the result of the discussions he learned that telling was not teaching. So he began to follow some of the rules of teaching when he gave his men their jobs. The amount of spoiled work began to drop off." Officers of supervisors' clubs and those who are interested in promoting studies in improved standards of supervision are now planning for the fall and winter programs and activities. Do the foremen and supervisors generally recognize how important is an understanding of the principles of teaching in successfully leading and directing the workers? Do they understand how to teach? Might it not be well to place more emphasis on and give more attention to this particular phase of the supervisors' responsibilities?

Convention Opportunities

ABOUT the time that long engine runs were first beginning to be considered, a division superintendent on one of the country's largest railway systems came to the conclusion that he could extend certain runs on his territory to advantage. His superior officers did not share his idea, however, and his recommendations were not approved. A short time later he attended the Buffalo convention of the Superintendent's Association where he listened to the discussion of this subject on the floor of the meeting. He also took every opportunity while there to discuss this subject with men from other roads and to learn of their experiences. As a result, he secured sufficient additional data to warrant him in reopening the question with the officers of his road and he finally secured authority to try the plan to a limited extent. Even on this small scale the immediate result was a saving of $800 per month from the closing of one small terminal, in addition to other indirect economies. From this small beginning engine runs have since been increased on many parts of the system with a resulting saving of large proportions to the road. This incident is cited as an indication of the educational value of convention attendance. It is not intended to imply that if the superintendent referred to had not attended this convention longer engine runs would not have been adopted by this road. Rather, it is contended that the information that this alert superintendent gathered at this convention advanced the date of adoption of this method of operation on his road by several months if not a year or more.

Advertising for the Short Haul Passenger

ADVERTISING designed to win back as passengers persons who have been using their own automobiles for trips from city to city is being run by the Boston & Maine in newspapers in its territory. Finding indications that people to whom the automobile is no longer a novelty are turning to the trains to "read and relax while they ride," instead of being concerned with highway congestion, parking problems, greater expense and frequent delays, the B. & M., through well-prepared advertising, is making this trend better known and putting all of its weight behind its continuation. "Use your automobile in going to and from the station, but make the longer journey to destination in the train" is the tenor of this newspaper campaign. "The railroad is more direct (runs over an open road of steel); is faster (running time substantially improved); is more restful (relax and read as you ride); costs less, and there's nothing to park," declare the advertisements. This advertising campaign in the newspapers is being backed up by direct mail advertising to automobile owners and by personal solicitation. The effect of such sales efforts to bring the short haul passenger back to the train will be very interesting.

Accurate Knowledge of Car Costs

THE practicability and value of making at least periodic checks to determine detailed car repair costs have been demonstrated time and again. A master car builder recently analyzed the labor and material costs of heavy schedule repairs to 130 cars of two similar classes and found the following costs per car: stripping, $5.49; truck work, $1.83; oxy-acetylene cutting, $3.64; steel work, $20.19; drilling, $2.61; air work, $5.82; carpenter work, $81.13; tin work, $0.69; painting, $7.00; total labor, $128.40; total material, $445.27; grand total, $573.67. This detailed analysis indicates that, in undertaking repairs to these two classes of cars, the most important consideration is to secure material of the required strength and physical characteristics at the most favorable price. The cost of carpenter work on these cars is the largest single labor item and it is here that efforts to provide labor-saving equipment and short-cut methods will produce the greatest returns. The cost of steel work is the next largest labor charge and proves the need for modern steel-handling facilities. The comparatively large proportionate charge for painting indicates the need of

giving careful consideration to this phase of the work and, in most cases, adequate mechanical spraying equipment should be provided. The mere compiling as a matter of record of every detail of repair work on every car would be a stupendous task involving the employment of large clerical forces and simply adding to the great volume of railroad records. An accurate, timely and possibly periodic check of the detailed cost of repairing different types of cars will, however, convey information of the greatest practical value, not only to the master car builder who wants to keep down costs at his car shops and rip tracks, but also to the designer who can thereby eliminate weak features in car design which give repeated trouble through rapid wear or failure.

Employee Solicitation

SECURING business for a railroad used to be regarded as the exclusive prerogative of the traffic solicitors. One of the most important and significant developments in modern railroading is found in the fact that this is no longer true. Employee magazines are constantly recording the fact that this machinist or that boilermaker, or this clerk or that auditor, have secured so and so many carloads of freight or passengers, either direct, or by giving the tip to the traffic solicitors. With the steady growth in other agencies of transportation, this employee solicitation takes on increased value. It is one of the means of combating bus and truck competition. How valuable employee solicitation may be is shown in the article in this issue on what has been done by the Gulf, Mobile & Northern in this regard. While the idea used on that railroad may not be generally applicable, it illustrates what can be done in this direction. With the various encroachments on traffic formerly handled only by railways, no legitimate opportunities for securing business should be overlooked.

A Natural Train Control Growth

WITHIN recent weeks several large roads have announced their intention to extend their train control installations to provide continuous protection on passenger routes between important terminals. The New York Central plans to complete the installation on the remainder of its main line from New York to Chicago while the Chicago & North Western is working on the last division in its Chicago-Omaha line. These developments follow the extensive program of the Southern which has completed the installation of automatic train stop on routes from Cincinnati to Jacksonville and practically from Chattanooga to New Orleans, with a total of 2,555 road miles under such protection. Other roads are working toward the completion of train control on such highly competitive routes as between Chicago and St. Louis, Chicago and St. Paul, New York and Buffalo, and Chicago and Kansas City.

These installations go far beyond the requirements of the train control orders of the Interstate Commerce Commission and indicate that train control has now passed beyond the compulsory stage to one of competitive advantage. The evident purpose of the commission's order was to force the extensive development of automatic train control. That this result has been attained is evidenced by the fact that many roads are voluntarily making extensions beyond the requirements of the commission. That these extensive train control installations are made in the interest of safety cannot be denied and the fact that complete competitive routes will be so equipped will undoubtedly be used as an inducement to secure passenger business.

The rapid development of the equipment and the circumstances controlling these extensions have brought about a new attitude on the part of the railroads with reference to train control that is in marked contrast to that existing at the time of the hearings in Washington following the announcement of the first order in 1922. From now on the majority of the roads may be expected to make installations of train control where they consider it justified from the standpoints of safety and benefit to train operation. In other words, the growth of train control mileage may now be expected to follow in general the history of automatic signaling during the last 25 years. This is the logical outcome of five years of rather turbulent train control history.

Knowing Your Locomotives

WHEN railroads undertake general improvements or extensive additions to their permanent way facilities, the very nature of the problem is such that the actual work is usually preceded by a careful study of both the immediate and future needs of the property. Only after such a study is a program worked out in detail and then if the additions or improvements contemplated are at all extensive, they may be divided into several projects the execution of which may occupy a number of years. Such programs are undertaken not alone to increase the capacity of the road for additional traffic, but are frequently instituted for the operating economies which they will make possible.

When railroads buy motive power, it has very frequently happened that little thought is given to the matter until increasing traffic makes the acquirement of additional locomotives imperative. Relatively much less attention has been given to the possibilities of spending money to save money in the case of motive power than in the case of fixed facilities.

Can any good reason be set forth why the same kind of thorough study of the present and probable future needs of a railroad as a whole and of the possibilities for effecting decreases in operating expenses which precede investment of capital in road improvements, should not precede investment of capital in motive power?

With the relatively small annual traffic increases which the railroads generally have experienced during recent years, improving net railway operating income has become largely a matter of reducing operating expenses rather than a matter of increasing gross revenues. There is reason to believe that in many cases a thorough survey of locomotive operation, embracing the yard as well as the freight and passenger services, will reveal opportunities for highly lucrative investments in modern locomotives to replace the accumulations of obsolete power, some of which may not be many years old.

A complete re-survey of the actual motive power situation of a railroad at intervals, say of five years, would, it is believed, do much to improve the operating efficiency of the railroad by bringing to light many inefficiencies which would otherwise be overlooked. It would also be conducive to the development of motive power plans in advance of the immediate needs of the property. This alone would be worth while in avoiding the mistakes of investment which result from the demands on the mechanical department for designs and specifications without adequate time for their preparation, which are so frequently made when the need for power is allowed to develop before thought is given to its purchase.

The First Half of 1927

THE operating and financial results of the railways during the first six months of 1927, some of the figures for which are now available, strongly indicate that the roads as a whole will this year again fail to earn a return of 5¾ per cent on their tentative valuation. The Transportation Act for seven years has made it the duty of the Interstate Commerce Commission to so adjust rates as to enable the railways, "as nearly as may be," to earn this much annually, but the only year in which it has been earned by the roads as a whole was 1926 and it never has been earned by the western roads.

The net railway operating income of the Class I railways in the first six months of 1926 was $495,598,414, and in the corresponding period of this year, $472,611,052, the decline being $22,987,362, or 4.6 per cent. The return upon the property investment in the first one-half of 1926 was at the annual rate of 4.93 per cent, and in the first one-half of this year at the annual rate of 4.58 per cent. During the entire year 1926 the return earned on property investment was 5.13 per cent, while on the commission's tentative valuation it was 5.98 per cent. If the roads do relatively only as well in the second one-half of 1927 as in the first one-half they will, in the entire year, earn less than five per cent on their property investment and less than 5.6 per cent on the commission's tentative valuation.

There has been decline in the percentage earned on property investment by every large group of roads in the country. The railways of the eastern district earned in the first six months of 1926 at the annual rate of 5.71 per cent as compared with 5.50 per cent in 1927; the railways of the southern district showed a decline from 5.65 per cent to 4.63 per cent, and the railways of the western district a decline from 3.79 per cent to 3.48 per cent.

The developments that have occurred illustrate that comparatively small changes in total earnings and operating expenses can still produce a relatively large effect upon net return. The reason for this is that even after all the improvements in the railway situation that have taken place within recent years, the margin between total earnings, on the one hand, and operating expenses and taxes on the other, amounts to less than one-fifth of total earnings. In the first half of 1927 total earnings declined about $12,720,000. Taxes increased $1,526,000. Operating expenses increased $4,436,000, all of which was due to advances in wages. The railways actually employed fewer men than in the first half of last year, but the average wage paid increased, the result being that in the first four months of the period wages charged to operating expenses were about $5,200,000 more and in the six months at least $6,000,000 more, than last year. The railways also paid more for hire of equipment. A good deal of coal is hauled in cars owned by mine operating companies, and it is probable this increase in hire of equipment was due mainly to the large amount of coal transported in the first quarter of the year in anticipation of a strike in the union mines.

The net result for the first half of the year was that with a decline in total earnings of less than one-half of one per cent, an increase in operating expenses of only two-tenths of one per cent, and an increase in taxes of eight-tenths of one per cent, there occurred a decline in net operating income of 4.6 per cent. The investment in the properties being larger than last year, the decline in the rate of return in the first half of the year was over 7 per cent. The railways have been fighting a doubtful battle all the year to maintain their net operating income. It declined in January, increased in February and in March, and then declined throughout the next three months. Its generally downward tendency has been due partly to declines in passenger earnings which, during recent months, have not been offset by increases in freight business. Freight car loadings continued to show declines in July, and it is therefore probable that the net return earned in that month was less than the year before.

The principal reason for the recent decline in carloadings has been a reduction in loadings of coal, which is temporary, and it seems probable that freight business and total net operating income will be as large in the fall and winter months as they were last year.

Why Are Railroad Stocks High in Price?

THAT stocks are now held in high regard is shown by the fact that the *Railway Age* average price of 20 representative railway stocks is now double what it was as recently as 1923; 20 points above what it was a year ago; 16 points above the first week of January this year and even 3 points above the average of a month ago. To present the picture in another form the figures reported in the New York Stock Exchange Year Book show that on May 1, 1927, there were listed on that exchange 171 issues of railway stocks, including 82,465,557 shares having a total market value of $8,181,820,750, whereas the 164 issues listed on January 1, 1925, included 79,901,861 shares with a market value of $5,986,532,868. Thus, in the period noted, there was an increase of only three per cent in the number of railway shares but there was an increase of 36½ per cent in their market value.

This should be extremely gratifying to all concerned—to the owners of railroad stocks, to the railroad men who have so increased railway operating efficiency as to effect increased railway earning power, and to the user of railroad service who profits from the improved efficiency and from the knowledge that restored railroad credit will help to guarantee a continuance of it.

There are many reasons why the prices of railroad stocks should have increased so satisfactorily. The element of restored efficiency and earning power, is of first importance. Next is the fact that the railroads, over a long period which terminated only recently, issued no new stock although they did spend large sums for capital improvement, a substantial portion of which was paid for out of income. As a result the equity of the stockholder has increased and to such an extent that in 1926, although the railroads earned net railway operating income equivalent to only 5.13 per cent on their property investment, their net income after interest and other charges equalled about $10.40 per share on their outstanding capital stock.

Dividend paying common stocks of the stronger railroads are at present selling on a basis whereby their yield in dividends is roughly about equal to 5.2 per cent on their selling price. There will, of course, be deviations from the average in accordance with prospects of earnings or of changes in the dividend rate. However, the issues paying 10 per cent, such as Atlantic Coast Line, Atchison, Topeka & Santa Fe, Canadian Pacific, Chesapeake & Ohio or Union Pacific, are selling around 192. The 7 per cent issues such as Illinois Central or Southern sell at about 135 while the Northern Pacific and Great Northern, paying 5 per cent, sell at about 95. Two or three months ago such issues sold at prices yielding about 5.5 per cent. In the intervening period there has been a great surplus of money which has now become sufficient to have led the Kansas City, St. Louis, New

York and Boston federal reserve banks to reduce their rediscount rates from 4 to 3½ per cent.

The fact that so much capital is available has tended to lessen its value for investment which helps explain the reduction in the yields on dividend paying railroad common stocks and the corresponding increase in the price for which the stocks can be bought and sold on the market. There is a question as to whether 5.2 per cent represents the minimum towards which the yields are tending. While some observers think that the prices of railway stocks are at present too high there are also many observers who expect dividend-paying railroad common stocks to sell at prices which will give even smaller yields.

In the case of non-dividend stocks, particular consideration is given to current and prospective earnings but the price will also be affected by the expectation, if any, of dividends, by merger prospects and other elements of value, real or speculative as the case may be. In the case of non-dividend paying cumulative preferred stock, consideration will be given to the amount of the dividends in arrears valued in the light of the prospective ability of the company to provide for their payment in the not too distant future. With reference more particularly to the non-dividend common stocks some credence is given to a rule-of-thumb that such securities can sell at prices ten times the current earnings per share. Thus it would follow, other things being equal, that if a carrier were reporting earnings of $5.50 per share on its common stock the stock should sell at about $55 a share. Whether the rule is correct or not, it is true that the stocks that have most risen in price recently have been the dividend-paying issues. The reports of earnings for May and June were not particularly good; the effect of this was shown in the failure of the stocks of the non-dividend paying carriers to show much increase in price. Indeed, following the reporting of the May and June earnings, many of the non-dividend issues showed a few points loss.

During much of the present year the prices of many railroad stocks were increased by speculative merger prospects. At present merger rumors are at a minimum with resulting recession of the prices of the stocks involved. The present high prices are due to more substantial elements.

Finally, one should not forget that in no industry are the current earnings and operations more adequately and promptly reported than is the case in the railroad industry.

In no industry is there any approach to the uniformity of earnings statements and in none is there that safeguarding factor of Interstate Commerce Commission policing that assures the analyst that the figures as reported exactly represent current results. This must be of greatest value from the standpoint of giving the investor a feeling of confidence at all times in place of a speculative uncertainty that must exist when earnings are reported only at six months or annual intervals and then frequently in the briefest permissible form, as is the rule in most other industries.

This does not exhaust all of the considerations affecting the prices of railroad stocks. It does, however, cover enough to convince one that present railroad security prices, speaking generally, reflect conditions that are essentially favorable.

The truly interesting feature, however, is that railway security prices are high notwithstanding the continued failure of the carriers to earn their fair return of 5¾ per cent. This is explained by the disparity between value and capitalization, referred to above, whereby many railroads report substantial earnings per share although the return on their property investment is far from satisfactory. So much value has been put into the railroads in recent years in the form of additions and betterments not yet capitalized that there is a cushion or shock absorber of uncapitalized equity between the failure of the railroads to earn their fair return on the one hand and their ability, on the other, to report quite satisfactory earnings per share and in many instances pay quite satisfactory dividends.

The truth of the matter is that there is not enough railroad stock outstanding nor are there as many railroad stockholders as would be desirable in an industry so vested with the public interest. Fortunately, the situation supplies its own means of remedy in that conditions are such as to permit the sale of railway stock. The railroads will gain in many ways by the ability of some of them to sell stock. Not the least of the several favorable results will be a partial elimination of the discrepancy at present existing between the frequently inadequate earnings on a carrier's property investment and the inflated earnings per share on its stock reported when business is good.

Canadian Pacific to Sell Stock

THE Canadian Pacific has joined the Atlantic Coast Line, Southern, Baltimore & Ohio, New York Central, Bangor & Aroostook and the New Haven in proposing to sell stock. The Canadian Pacific issue will include $32,500,000 ordinary stock to be sold to stockholders at 150 in the ratio of one new share for each eight now held. The company will, in addition, issue $5,000,000 of new stock for subscription by officers and employees of the company at the same price. The stock is now selling in the market at about 185 and has been as high as 194⅜. The value of the subscription rights to the stockholders is quoted at $3.50 a share. The non-stockholder officer or employee similarly will be given opportunity to become one of the partners in the company at a saving of about $35 or $40 a share. The Canadian Pacific has outstanding $260,000,000 ordinary or common stock. Of the total over a majority—53.96 per cent—is owned in the United Kingdom. Holdings in the United States at the end of last year totaled only 18.74 per cent and in Canada, 19.43 per cent. The stock has paid 10 per cent dividends since 1911, 7 per cent from its railroad earnings and 3 from its extensive steamship, telegraph, hotel, land, mining and other operations.

The company is held in such high regard by American investors that its stock sells approximately on a parity with such other high grade 10 per cent stocks as Atlantic Coast Line, Atchison, Topeka & Santa Fe, Norfolk & Western, Chesapeake & Ohio or Union Pacific. Reasons for this include the fact that the company has been paying—and earning—the 10 per cent rate over a longer period, that both the 7 per cent from railroad earnings and the 3 from other operations has been earned in every year—war-years or other—since they have been paid and that the rate is regular, whereas the Coast Line, Santa Fe and Norfolk & Western disbursements are partly regular and partly extra. No doubt another factor has been the impending announcement of the sale of the new stock, the stockholders having authorized, at the annual meeting in May, 1926, an increase of $75,000,000 in the ordinary stock, one-half of which is to be issued at this time. This is the first stock that the company has sold since an offering of $60,000,000 in 1913 at 175. The company earned in 1926 $14.12 a share on its ordinary stock and it is estimated that 1927 earnings will exceed this by a small amount. Such would approximate $12.50 per share on the increased capitalization.

P. R. R. Builds Country's Largest Express Terminal

Extensive layout includes unusual facilities to expedite handling of enormous business at New York

Looking North Over the Terminal from the Harold Avenue Bridge

WHILE the American Railway Express Company is represented in some way on approximately every railroad in the country, and in many instances handles its business through extensive and highly organized facilities, the largest terminal, and in many respects the most up-to-date in the country devoted exclusively to the handling of express shipments, is that recently completed by the Pennsylvania to serve the New York Metropolitan district. This terminal is located in Long Island City, Long Island, adjacent to the Pennsylvania's extensive New York terminal facilities at this point, and directly east of upper Manhattan. In its entirety the new terminal has been planned, laid out, and equipped with the primary purpose of making possible the expeditious and efficient handling of all classes of express shipments, from the driveway and platform arrangement to facilitate truck movements, to minute details within the terminal itself to expedite the weighing, billing, sorting and loading of every shipment.

The terminal building itself is a steel skeleton brick-faced structure covering an area of approximately 245,000 sq. ft. or over 5½ acres, which is surrounded on three sides by approximately 126,700 sq. ft. of concrete driveways which permit the movement of from 300 to 400 express trucks about the terminal without congestion. Within the terminal, which provides large office facilities and auxiliary units for the handling of special classes of express, the main area is occupied by six tracks with a total capacity of 84 cars, and by wide loading and unloading platforms, at car floor height, between adjacent pairs of tracks and along the sides and east end of the building. While the size and layout of this terminal make it of interest in a number of respects, it is also of interest because of its completeness and the special facilities which have been provided to facilitate and speed up the handling of the thousands of shipments that are sent out and received at this point daily.

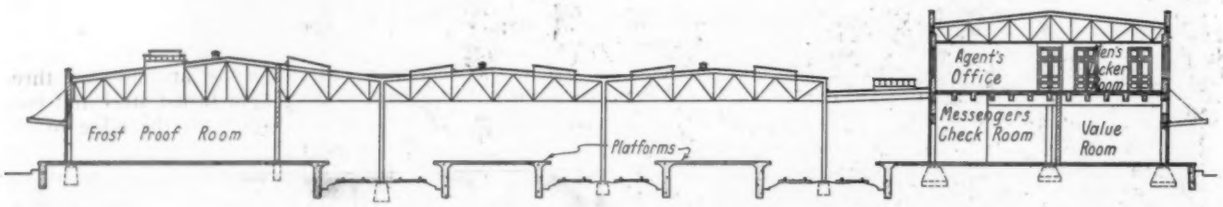
Keeping pace with railroad business in general, the express business throughout the country has continued to grow, this being particularly true in the New York Metropolitan area which handles approximately one-eighth of the total express business of the country, this amounting to approximately 46,660,000 shipments in 1926. Of these, approximately 75 per cent were outbound, the remainder being shipments received for delivery in the New York area. The Pennsylvania carries much of this business, and it has been recognized for some time that new express facilities were essential on its lines at New York, as the existing facilities were overcrowded and in many respects not suitably located to serve best such a large congested territory.

The old express facilities of the Pennsylvania, serving New York were confined, until recent years, to pier D, on the waterfront of the North (Hudson) river in Jersey City, N. J. This pier, which is just across the river from lower Manhattan, is a two-story, steel frame structure, enclosed in corrugated iron, 630 ft. long by 170 ft. wide, only the first floor of which has been used by the express company for its major terminal operations. Within this building, which is served by two pit tracks with capacity for 24 cars, all of the express business moving in and out of New York on the Pennsylvania was handled, all collections and deliveries of shipments being made from this point by means of wagons and electric trucks and tractors.

During recent years, relief from the congestion at this pier has been afforded through the utilization of a portion of the track level area at the Pennsylvania's passenger terminal at 34th street and 7th avenue, New York, although no special facilities or space were pro-

vided for this purpose in the original construction of the terminal, and in spite of the fact that this arrangement has always been considered as temporary. With the gradual increase in express business, even this arrangement did not provide adequate facilities, and furthermore, it was soon felt that the express facilities at the Pennsylvania station were occupying space which was needed to take care of the increasing passenger business. In addition to these difficulties there was the growing problem of the movement of express trucks through the congested streets to the Jersey City terminal, particularly between four o'clock and six o'clock in the afternoon when express truck movements to the terminal, and pedestrian and vehicle traffic were at a peak.

A study of this situation led to the construction of the new express terminal at Long Island City, a layout which is not only more favorably located than the old facilities at pier D, but one which takes care of present requirements adequately and provides for future expansion. With the new terminal completed, all of the express business formerly handled at the Pennsylvania station has been transferred to the new facilities, with the exception that a local receiving station is still maintained at that point, and all of the business at pier D has been likewise transferred to the new terminal with the exception of such car load shipments of perishable produce as are consigned to the markets directly across the river in lower New York.



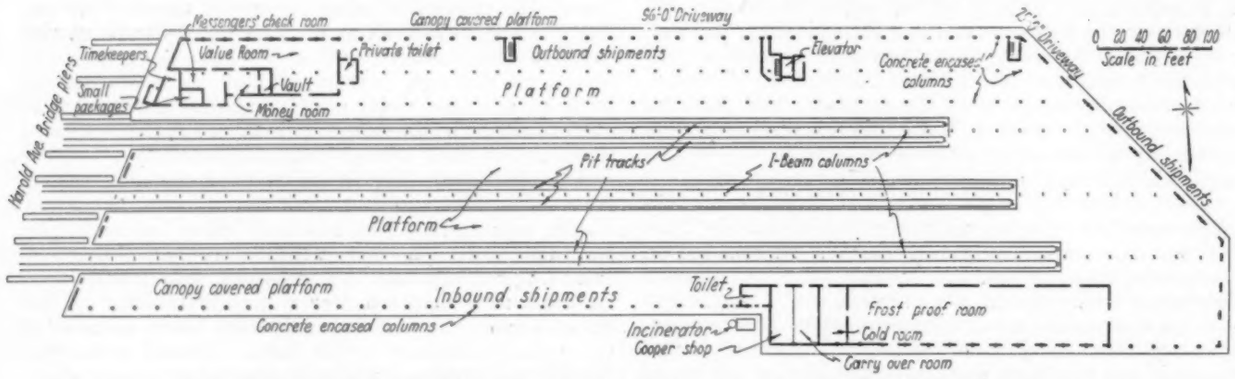
A Section Across the Terminal

New Terminal Provides Extensive Facilities

The new express terminal in Long Island City is a steel frame, fireproof structure with red brick exterior walls, located within the Sunnyside yard area of the Pennsylvania, almost directly east of and about two and one-half miles from the east approach to the Queensborough or Blackwell's Island bridge which connects the borough of Queens with upper New York on Manhattan island. The new building was constructed at the level of the yard tracks, which are from 20 to 30 ft. below the street levels on either side, with its west end abutting the Harold Avenue bridge which was built across the yard a number of years ago to connect the important thoroughfares on either side.

The building is essentially a one-story structure designed specially for the handling of express shipments, although a second story is provided along the north side for office space, and a small third story is located at the north end of this unit, on a level with the Harold Avenue bridge, for use as a local receiving office and as an entrance for employees to the floors below. The first or shipping floor of the building is in the main one large covered area, approximately 1,017 ft. long and 267 ft. wide, occupied by three double-track pits running practically the full length of the building, and by four platforms, two of which are intermediate between the track pits. The pits, which are 25½ ft. wide, are located 54 ft. center to center, an arrangement which permits 28-ft. intermediate platforms, a 50-ft. platform along the south side of the building, and a 78-ft. platform along the north side. This arrangement also made it possible to locate all of the steel roof-supporting columns, throughout the track area of the building, between the two tracks in each pit thereby avoiding all obstruction to the long intermediate platforms and to the platform on the south side of the building.

On the north side and the east end of the building, where the platform space is considerably wider than at other points, the steel columns of necessity occupy a small portion of the floor area. The spacing of these columns, however, including those under the second floor of the building, which are encased in concrete and placed somewhat closer together, is such that little or no difficulty is experienced in the movement of even the longest trains of trailers about the platforms.



Layout of the First Floor of the Terminal Which Covers an Area of About 245,000 Sq. Ft.

The roof of the building, which consists of a series of double-pitched sections running lengthwise of the structure, is constructed of American precast flat cement tiles which are covered throughout by built-up roofing. These tiles are supported on steel channel purlins, which in turn rest on light structural steel roof trusses which ex-

tend between the adjacent rows of columns. Throughout the entire expanse of the roof, large skylights are located at frequent intervals, as are also metal ventilators, which together afford adequate daylight and ventilation to the entire first floor.

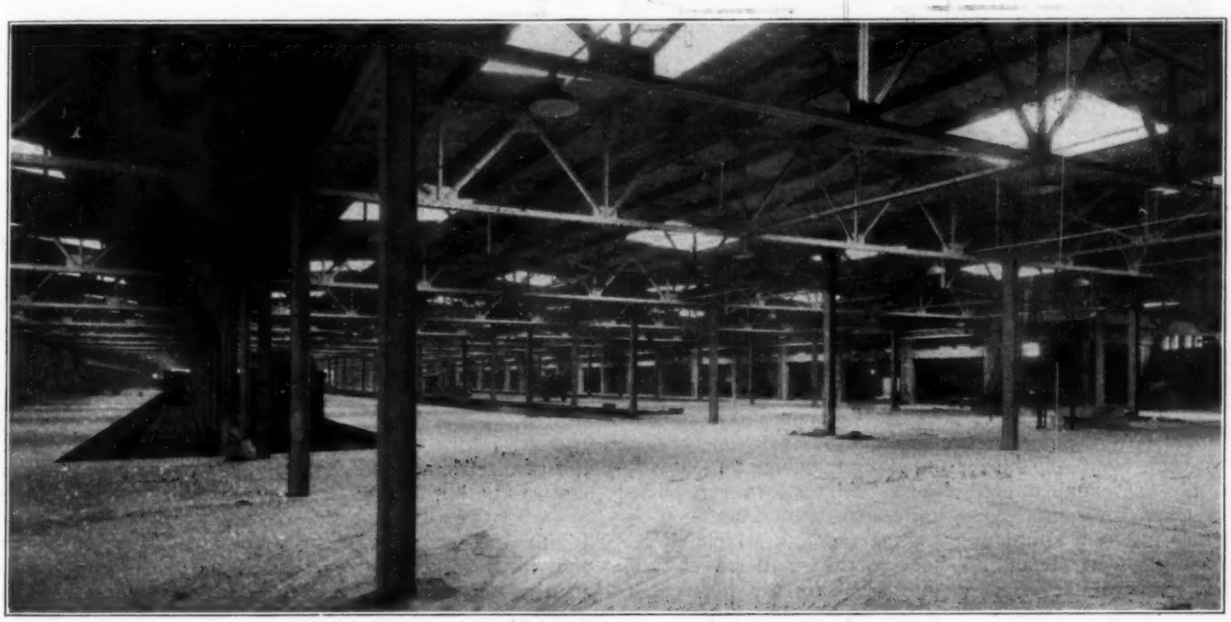
The platforms throughout the first floor of the building are of concrete, surfaced with a mixture containing steel filings, and all edges of the floor, such as along the platforms, are protected by heavy channel irons. Protection is also afforded the brick and concrete pilasters along the sides of the building, and the concrete encasement of the columns, by means of steel angles and plates, and the outside edges of the 7-ft. concrete platforms which serve the building on three sides are protected against chipping and wear by special non-slip steel plates, 2½ ft. wide.

While the main floor is occupied principally by the track pits and platforms, certain space at the northwest corner of the building and along the south side toward the east end has been divided into rooms of various sizes to provide for the safe and proper handling of cer-

ger's check room for the use of messengers when checking in or out; a timekeeper's office; and a small package room. The only other specially assigned space on the first floor of the building is that for two small toilet rooms, four stair wells and an elevator shaft, all of which facilities are on the north side and in each case so located as to afford minimum interference with trucking.

The exterior of the building at the platform level is practically one continuous line of doors, separated only by the pilasters. These doors, of which there are a total of 91, are a new type of steel shutter doors manufactured by the David Lupton's Sons Co., Philadelphia, Pa. These doors are made up of a series of longitudinal sections lapped one over the other, the various sections of the door telescoping within vertical guides at the sides to the depth of one section at the top of the door when opening. Each of the doors is operated by a simple chain hoist mechanism.

Above the doors and extending around the three teaming sides of the building, is a broad steel and concrete canopy which extends well over the edge of the



Looking West Through the Well-Lighted Interior of the Main Floor

tain classes of express shipments. On the south side of the building, this space provides a large frost-proof room, 160 ft. by 40 ft., which can be kept cool in the summer and heated in the winter to protect perishable shipments; a cold room, 40 ft. by 20 ft., in which shipments can be held temporarily under refrigeration; a carry-over room, 40 ft. by 32 ft., for shipments held for delivery or returned after an unsuccessful attempt to make delivery; and a cooper shop, 40 ft. by 28 ft., where damaged shipments can be rewrapped or their containers repaired. Supplementing these facilities, immediately adjacent to the cooper shop, but outside of the building itself, is a large capacity incinerator where all classes of waste from the cars and building can be disposed of readily.

On the north side of the building the auxiliary space on the first floor is divided into a "value" room for the handling of special shipments such as candy, tobacco, films, etc., and for holding the safes of the car messengers; a money room and vault for the handling of bullion, currency and shipments of large value; a messen-

platforms to afford protection to loading and unloading operations during bad weather. Above the canopy is the plain brick face of the building, interrupted only by a continuous row of sectional, center-hung, steel sash windows, three to each door panel, and by a small amount of brick art work to give the building a pleasing appearance. In the two and three-story sections of the building, extensive areas of wooden sash windows provide adequate daylighting of the office space.

Upper Floors Used Principally for Offices

The second floor of the express building, which extends along the full length of the north side, is approximately 56 ft. wide, and with the exception of one large room at the east end, is divided into a large agent's office, a large men's locker room fully equipped with individual steel lockers, a large record room, a large supply room, and a number of smaller rooms such as wash rooms, toilets and offices for the special departments of the express company. These facilities occupy both sides of the second floor of the building and are separated by a

long central corridor. All of this portion of the building is appropriately finished with plastered and painted walls, oak doors and trim, and yellow pine floors, except in the toilet and wash rooms where the floors are of concrete.

The large room at the east end of the second floor, which is approximately 220 ft. long by 56 ft. wide, is completely fitted as a workshop and charging room for repairing and charging the large number of electric platform trucks used throughout the building. At the west end of this room is an elevator shaft through which a six-ton freight elevator operates between the two main floors of the building and the relatively small basement immediately beneath it, in which is housed complete electrical equipment for stepping down the high voltage

A Few of the Double Billing Booths and Their Equipment

alternating current received from the local power company, and for transforming it into direct current for use in charging the storage batteries of both the platform and the highway trucks.

The third floor of the building, as previously mentioned, fronts on the Harold Avenue bridge and consists only of a small unit used as a public entrance and local receiving station. A special feature at this point in the building is a spiral metal chute through which parcels are conveyed from this floor to the small parcel room on the lower level for loading out into cars.

Large Business is Closely Scheduled

While the second and third floors form an essential part of the building in handling the express business at the new terminal, it is the main floor that is the scene of intensive operations. Here, during the season just closed, some 55,000 shipments were handled daily, which included approximately 80,000 separate pieces. Under normal operation, about 75 per cent of the business at the new terminal is outbound and about 25 per cent inbound, which on the average necessitates the unloading of about 75 cars and the loading of about 75 cars daily, these number of cars fluctuating, of course, with the seasons of the year and with the character of shipments. As a general rule the inbound shipments are received in nine solid express trains, while the outbound shipments are handled in eight solid express trains and about 14 units of varying numbers of cars for movement in combination passenger and express trains. As all of these trains must pass under the North and East rivers, and under the city of New York in reaching or leaving the new express terminal, the operation of the trains is entirely by electricity, electric power being cut into and out of the trains at Manhattan Transfer on the Pennsylvania, just east of Newark, N. J. With this type of operation, the disadvantages of smoke and steam are not experienced at the terminal, and the electric locomotives move freely within the building, in drilling operations.

In the general lineup of the business at this point, the unloading of inbound cars begins about midnight and continues until about 3 o'clock the following day, the cars being drilled out as unloaded and replaced by empty outbound cars which are lined up in train order. At about 3 o'clock, the loading of outbound shipments begins and is carried out with a schedule designed to coincide with the various times of departure of the several trains, these varying from early in the evening until 2:40 a.m. when the last outbound train is scheduled to leave.

In order to meet the schedule of every train and complete the handling of every day's business within the day it is received, which are particularly essential at the new terminal where such a large number of shipments are handled, the new building has been laid out, the equipment has been selected, and every employee has been trained with the primary view of facilitating and expediting the handling of each shipment. To this end, the north side of the building has been specially fitted for handling outbound shipments, the east side for handling non-waybill and blank-waybill express, and the south side for loading out inbound shipments, an arrangement which segregates operations to a large extent and yet one which is flexible enough to permit the handling of the various classes of express at any point if the necessity should arise.

Speed Handling of Outbound Shipments

The outbound shipments handled at the terminal, which constitute the larger part of the business, are generally being received throughout the day, although by far the greater bulk of these deliveries are made during the afternoon and evening following the regular collection among the manufacturing concerns and merchants about the city. All of these outbound shipments are brought to the terminal by the one thousand or more vehicles of the express company in New York, consisting of electric and gasoline highway trucks and gasoline tractors with semi-trailers, supplemented by a few horse-drawn trucks. The tractors with semi-trailers, while highly adaptable to collecting truck load shipments from individual shippers, are confined mostly to the service of transferring shipments from the assorting stations and railroad express terminals in New York to the new terminal, in which service the greatest advantage can be secured through the intensive use of the tractors while the trailers are being loaded and unloaded.

On the north side of the building where the greater number of outbound shipments are received, are 21 double, frame billing booths, built around the second floor supporting columns, which are located directly back of and about 25 ft. from the pilasters between the doors. In these locations, each booth is surrounded by ample room for the expeditious unloading, weighing, billing and sorting of the shipments received. A special feature of the facilities at each of these booths is the scales. These consist of a Howe dormant scale with the unusually large capacity of 5,000 lb., fitted with a special appliance affording an illuminated and non-oscillating dial, and a special thermostatic scale of 100-lb. capacity which is quick-indicating and not affected by temperature changes.

In actually carrying on this end of the business, the highway trucks with their loads of miscellaneous shipments for widely scattered destinations, back up to the unloading platform and discharge their loads. The shipments are then weighed and billed, and sorted into piles according to cars, these operations being almost con-

tinuous throughout the late afternoon and evening as a thousand or more trucks feed into the building at a rapid rate. In moving the shipments about the building, a large fleet of electric tractors, trucks and trailers are in constant operation, this equipment consisting of two Baker, two Automatic and one Mercury tractor, and large numbers of Elwell-Parker self-propelled electric trucks and trailers, and Reynolds trucks. The tractors and Reynolds trucks are used almost exclusively for handling outbound billed shipments from the north side platform to the cars, these units being built up into trains consisting of a tractor and from 4 to 20 trucks, depending upon the volume of business. These trains of trucks pass along the receiving platform, and are loaded to capacity from the many sorted piles, each truck receiving shipments for a specific car. From the receiving platform, the trucks are hauled over the long platforms serving the loading and unloading tracks, and one by one are dropped off or cut out in front of the specific car to which their load is assigned. This work is greatly facilitated and speeded up by markers suspended from a system of wires above each door and by the further fact that in spotting the cars, they are placed in train order and therefore are in practically the same location every night.

A further expedient devised to meet the unusual situation existing at the new terminal where the length of the building and the track pits would have necessitated the hauling of some shipments over 2,000 ft. to the proper cars, is the installation of lift bridges across the track pits at about third points in their lengths, whereby short-cuts can be made to any of the platforms and cars, or across the building, with a large saving in time and in the length of haul. These bridges are of timber construction and are readily lifted and lowered in a horizontal plane by electric power. The presence of these bridges, of which there are six, necessitates the cutting of the trains at the bridge points, and the raising of the bridges while drilling is under way.

Special Handling Provided For

The handling of non-bill and blank-bill outbound shipments at the east end of the building is an expedient adopted at the new terminal and used at other large express terminals, whereby, during the rush of the day or in heavy shipping seasons, the weighing and billing of thousands of shipments can be transferred to the points of destination of these shipments where the weighing and billing can be carried out without congestion or tying up the originating terminal. In this way, each day's business at the new terminal is moved out the same day on scheduled trains, a situation which could not exist if every piece had to be fully labeled and recorded. The handling of this class of business to cars, which in general includes the larger, heavier and more awkwardly shaped shipments, is usually done with the Elwell-Parker electric trucks and trailers.

While the facilities described on the north side and the east end of the building handle by far the greater part of the shipments passing through the terminal, these are supplemented by the frost-proof room and the cold storage room on the south side of the building, through which perishable produce, fish, oysters, meat and other such commodities are handled, and by the "value" room and vault on the north side of the building where valuable shipments are received and sent out. At the east end of the building is a ramp to the driveway level over which automobiles, horses and other animals on the hoof are easily moved to and from the platform level.

Electric Tractors Haul Trains of From 4 to 20 Loaded Trailers About the Platforms

The handling of the inbound business at the terminal is in many respects the reverse of the operations in handling the outbound business, with the exception, of course, of the weighing and billing of the shipments. This work usually begins about midnight when the first inbound cars are drilled into the building, and consist essentially of unloading the contents of the cars, on to trucks and trailers spotted in front of the doors, and hauling the shipments to the proper doors along the south side of the building for subsequent loading into the highway trucks for delivery about the city.

While much of the credit for the effective handling of the large express business at the new terminal is due to the layout within the building itself, the special facilities provided, and to the effective organization of the 900 to 1,200 employees who are employed in three eight-hour shifts throughout the various seasons of the year, other features of the terminal worthy of note are the charging plugs along the face of the platform, the wide driveways which surround the building, and the effective floodlighting of the driveways, which makes truck operation simple at night and greatly facilitates the police protection of the building. The charging plugs mentioned are located along the face of the building plat-

forms in front of the doors, where, by suitable flexible connections, they can be connected up with the storage batteries of the electric highway trucks, which can be boosted or fully charged as the trucks are loaded or unloaded, or are allowed to stand along the platforms over night. This arrangement, which provides for the charging of 100 trucks at a time through current supplied by two generator rooms in the basement of the building, not only keeps the trucks in operation a greater part of the time, but saves the time of operators and a considerable mileage for each truck in running daily to the various garages of the express company about the city.

Interior of the Terminal at the East End

All of the driveways about the building are of concrete, the drive on the south side being 50 ft. wide, that at the west end, 75 ft. wide, and that on the north side, 96 ft. wide. These drives were made of various widths to meet the anticipated truck movements on each side of the building, the 96-ft. drive on the north side being laid out with the intention that it will serve a carload lot express track along its outer edge, as well as the north side of the building. The outlet for these driveways is over a specially constructed concrete ramp, 25 ft. wide, which extends from the yard level to a connection with the Harold Avenue bridge.

The driveways and the area about the terminal are lighted by means of high power incandescent lights fitted with specially shaped reflectors, and spaced at intervals of about 40 ft. around the building along the top of the parapet walls. These lights illuminate the driveways effectively at night and greatly facilitate the work of the 28 company policemen who patrol the building throughout the 24 hours of the day.

All of the work in connection with the new terminal, which in addition to that described, included approximately 300,000 cu. yd. of grading and the construction of a 385-ft. extension to the Harold Avenue bridge along the west end of the building, was carried out under the general supervision of A. C. Shand, chief engineer of the Pennsylvania until February 1, 1927, and now assistant to the vice-president, E. B. Temple, chief engineer of the Eastern region of the Pennsylvania, and J. F. Murray, assistant chief engineer of the Pennsylvania, working in co-operation with D. M. Scheaffer, then manager of mail and express traffic, of the Pennsylvania, and the following officers of the American Railway Express Company: R. E. M. Cowie, president; C. W. Robie, vice-president; and J. R. Christie, general manager New York City department. The actual construction of the terminal on the ground was in direct charge of J. J. Vail, assistant engineer of the Pennsylvania.

The principal contractors on the work were Henry Steers, Inc., New York, who did all of the grading, placed all of the foundation piers, built all of the concrete platforms and driveways and constructed the extension to the Harold Avenue bridge; the Shoemaker Bridge Company, Philadelphia, Pa., which erected the steel framework of the building; The Turner Construction Company, New York, which completed the building construction; and Fischback & Moore, New York, who had complete charge of the electrical installation.

We are indebted for assistance in the preparation of this article to Stanley W. Todd, editor of publications of the express company; P. C. McGuiness, express agent at the new terminal, and to Mr. Vail, who was in charge of the construction work.

Boston & Maine to Analyze Repair Costs

IT is usually rather difficult to determine just how much it is costing a railroad to maintain any specific series of freight cars, or for what proportion of the total different parts are responsible. When the cars are repaired on foreign lines, the A. R. A. billing repair cards are passed through the M. C. B. clearing house for approval. The cards are mixed with many others coming in from all parts of the country, thus making it a rather tedious task to pick out the cards covering a certain series of cars.

L. Richardson, mechanical superintendent of the Boston & Maine, has placed in effect a simple scheme for checking up the maintenance costs of eight series of cars. He selected a number of cars from each of the following series:

No. selected	Types of cars
25	Box, steel center sills
50	Box, steel underframes
25	Box, 40 ton
25	Box, new A. R. A.
25	All steel gondola, 40 ton
25	All steel gondola, 50 ton
25	U. S. R. A. coal cars
25	Flat

The Boston & Maine designation has been removed and the cars have been stencilled "Mystic Transportation Company, at home on the B. & M.," which provides a guide to foreign lines in billing for repairs. The cars stencilled are all in good condition. The A. R. A. billing repair bureau has the numbers of these cars and special accounts have been provided for them. Whenever a billing repair card comes in bearing the "M. T. C." initials, the billing clerk will enter the charges in the proper special account. Any repair cards originating on the home lines will also be similarly marked and accounted for. In this manner, an accurate record will be kept of the maintenance cost for these cars with no increase in personnel and with a minimum amount of extra work.

The costs will be carefully sub-divided by parts of the cars. A monthly report will be submitted to the mechanical superintendent by the A. R. A. bureau. By making a careful analysis of these reports it is hoped to determine what parts of each series require abnormal maintenance and then steps will be taken to reduce the excessive costs either by redesigning the part or specifying new materials.

Unique Solicitation Methods Result in Increased Revenue

Letters from train and engine crews to shippers bring new business to Gulf, Mobile & Northern

FACED with a rapid and alarming decrease in the movement of forest products, its principal source of revenue, the Gulf, Mobile & Northern found itself, a few years ago, in a serious position. The very life of the railway was wrapped up in the Mississippi lumber industry and, when that industry showed unmistakable signs of decline in the territory tributary to the railroad, it seemed that little hope remained of a continuing prosperous life for the line.

In this situation, the railway found itself with one tremendous asset, the loyalty and enthusiasm of its employees. There were other assets and contributing factors tending toward increasing business more than 60 per cent since 1923, despite the decline in the movement of forest products, but employee loyalty was the prime cause.

Unusual Railway Salesmanship

The idea that was responsible for much of this increased business had its birth in the cab of a freight locomotive. Of course, its details were worked out elsewhere, but it originated one day when one of the officers was riding an engine down the line. He was perturbed by the falling off in the lumber traffic and mentioned the necessity of securing increased business to the engineman. Between them, they evolved the beginnings of the idea which was to mean much business for the railway. The idea is simply this: Members of the freight train crews, on each run, write letters to the shippers and consignees of every shipment on the train, advising them of the fact that the train is carrying their shipment, and giving them passing and delivery records. In addition the letters contain a short sales talk on the advisability of routing shipments via G. M. & N.

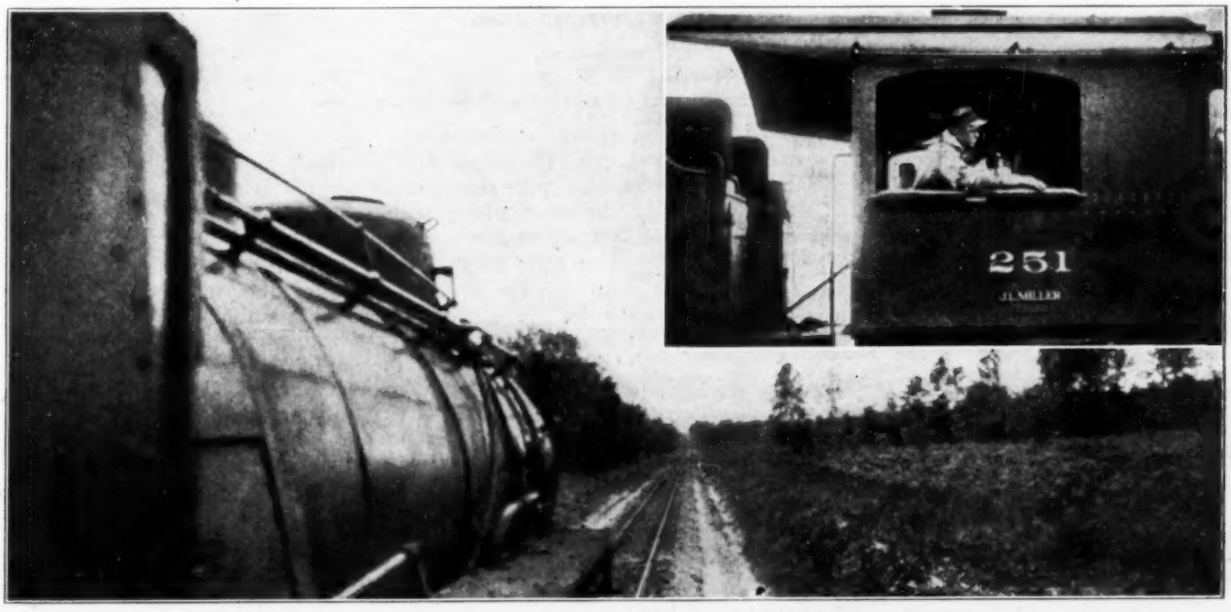
These letters were typed by stenographers in the cabooses at first using the waybills as a basis. Later, it was found more efficient to have the letters typed at the division points, where they are turned over to the crews for signature. Letter heads specially printed are used for the purpose and each letter is signed by some member of the train or engine crew. Each letterhead is illustrated with a picture of the train, giving the names of each member of the crew beneath it, as will be seen from the accompanying illustrations.

Letters of Real Interest

The letters written are by no means stereotyped or formal. They are interesting and personal and display the spirit of the employees. They were evolved at joint conferences between the men and the management and, in a large measure, are couched in the language suggested by the men themselves. The three following examples are typical of the letters written.

This one is from an engineman:

Good Morning! My name is Joe Liddell. I am looking for more business. I am a freight engineer on the Gulf, Mobile & Northern with engine 252 on manifest freights Nos. 55 and 56 between Jackson, Tenn., and Louisville, Miss., a distance of 188 miles which we make in a little less than 10 hours actual running time. This locomotive is one of the Decapod type and is the second largest of this type in the United States. The



GULF, MOBILE AND NORTHERN RAILROAD COMPANY

J. L. MILLER
ENGINEER

"CROSS CROSSINGS CAUTIOUSLY"

WALTER COLTHARP
FIREMAN

One of the Letterheads Used for Crew Solicitation Letters

above picture was taken about five miles south of Jackson, Tenn., while we were right on time with No. 55's schedule, which schedule we have maintained 100 percent since being assigned to this run.

No. 55 today has among 60 loads WLE 27796, roofing, consigned to LaGrange, Texas, moving for your account. This car was delivered to us this morning at Jackson, Tenn., and will in turn be delivered to the MCRR at Beaumont early in the morning.

I just want you to know that your business is carefully handled while directly under our charge and that it is looked after in accordance with statements made by our Mr. W. O. Lewis, whom you possibly know. I can vouch for the fairness of the company's dealings with you and assure you that every one on this road, from the president to the track men, as well as the train and engine crews, appreciates your good business. May it always be "good!"

The letters written by conductors are along somewhat different lines, as follows:

The above picture will give you some idea of my "place" of business over a 188 mile district on trains Nos. 55 and 56 between Jackson, Tenn., and Louisville, Miss., with the second largest decapod type locomotive in the United States. My as the world sees me. Below is my view of the passing world while on duty moving the Nation's commerce. When you consider that there isn't a pound of freight that moves via rail but what the first impulse of movement is conceived in the brain of a locomotive engineer you will be glad to know that the engineers on this railroad make an earnest effort to move your business quickly and carefully.

Letters Strike Responsive Chord

The replies received to these letters leave no doubt in the minds of the management that the plan is a success. They come in from every state by the hundreds and all of them are very cordial in tone. Big shippers and small shippers take time to write personal letters to crews, expressing pleasure. Without exception, they promise to remember the G. M. & N. with future business and in many instances give the car numbers of shipments that have been routed G. M. & N. as a result of this solicitation.

An unlooked for result is that the crews are receiving love letters from stenographers and gifts of merchandise

GULF, MOBILE AND NORTHERN RAILROAD COMPANY'S MANIFEST FREIGHT NUMBER 55

"TAKING YOUR FREIGHT TO MARKET"

J. E. LIDDELL, ENGINEER — ALBA NEWTON, FIREMAN — L. C. WOODWARD, CONDUCTOR — R. S. PUGH, BRAKEMAN — H. J. GOOLSBY, FLAGMAN

Some of the Letterheads Carry the Names of the Entire Crew

office is the little red caboose coupled to the rear of the train. This picture was taken one mile south of Falkner, Miss., while as usual we were right on time with No. 55.

One of the cars in our train today, and we are still on time, is IC 341827, in which there is billed a shipment of two filing cases, billed by you from Chicago and consigned to the Soule Steam Feed Works, Meridian, Miss. This shipment was received at Jackson, Tenn., today and should arrive in Meridian tomorrow afternoon in time for early morning delivery the 20th.

With 17 years of service with this company I have noted many wonderful improvements and I assure you that your business is handled carefully, quickly and safely while in our care. You will find our management fair, and as the interest of the management and employees is mutual—so is the appreciation of handling your business, be it large or small. I hope business is good with you.

Another from an engineman reads as follows:

I am "on time" with Gulf, Mobile & Northern manifest freight No. 51 enroute between Jackson, Tenn., and Louisville, Miss., a distance of 188 miles, which we make in 10 hours actual running time.

I have in my train today car IC 45716, flour, shipped from you at Minneapolis Oct. 14th, destined ABC Exporters, Mobile, Ala. Right now we are approaching the Tennessee-Mississippi state line at 30 miles per hour. Your car is moving nicely and should be at boat side, Mobile, early on the morning of the 22nd.

Above I am shown in the cab of my regular assigned engine

from the shippers. One shoe company outfitted an entire crew with shoes, many pounds of candy have been sent to them, along with other miscellaneous merchandise, including saws, bags of flour, cough medicine, etc.

Nearly all the letters contain invitations to the crews to visit the writers at any time they may be in the same town. The president of a big automobile company was among several shippers who were particularly cordial in inviting one of the enginemen to visit him in New York. This same engineman received several other urgent invitations to visit shippers in the North. Accordingly he was permitted to go north to accept some of these invitations, where, besides having the time of his life, he acted as an important representative of his railroad.

Excerpts from some of the replies received are given in the following.

From the manager of a sewer pipe works at Birmingham, Ala.:

The letter you have written us under date of the 2nd is the first one of its kind we have received. Any conductor, who is interested in shipments to the extent that you seem to be is

entitled to a reward of more business. We will get more of our customers to route shipments your way.

From the traffic manager of a lumber company at Longview, Wash.:

I am struck by the novelty and effectiveness of your letter of March 30 reporting handling of six cars of pipe for us. You are to be congratulated upon this high grade work which is sure to bring results to your line. Such interest on the part of the "Skipper" and his crew is particularly impressive to me.

From the vice-president of a boiler factory at Charleston, W. Va.:

We are in receipt of your interesting letter of the 4th inst., and in reply beg to advise that the car handled by you on April 4 is the first shipment on a contract amounting to about 11 cars, all of which will be routed C. & O., I. C., G. M. & N.

We trust that your good train No. 55 will handle the additional shipments as promptly as the first car was moved and when we again have shipments going into your territory, we will be very glad to give the G. M. & N. all preference possible.

From the manager of a cotton gin at Wharton, Tex.:

We have been shipping and receiving shipments in car load lots for a number of years, and this is the first time we have ever received a letter from a conductor on a train that handled a car load of our goods. We do think that your plan is unique and should get results for your company if you keep it up. We thank you for advising us of this shipment, and will say that if we ever have any more shipments coming out of Birmingham, Ala., we will be very glad to have them routed over your road, and hope that you will be the man to handle the shipments.

From the traffic manager of an automobile company at Auburn, Ind.:

Your letter was read with a great deal of interest and we want to assure you that it is probably the most unique passing report that we have ever received. Your letter made a particular appeal to the writer, who is an old railroad man himself.

From the vice-president of an air brake company at Pittsburgh, Pa.:

Your letter of December 23 advising of the efficient manner in which you handled a carload of our products has just been received and read with very special interest and I am writing to assure you that the prompt and satisfactory manner in which this shipment was handled and your courtesy in writing to this company advising of such is greatly appreciated.

From the manager of an automobile company at Long Beach, Cal.:

We are extremely pleased to receive your letter of March 9th relative to our car load transported by your company. It will be a pleasure for us to use our influence to have future shipments routed via G. M. & N.

From the secretary of a farm supply company at Monroe, La.:

We appreciate the service and we think that probably on your next run you will have a carload of fence for us from Peoria, Ill., as this car will be routed your way.

From the traffic manager of a cotton oil company at Portsmouth, Va.:

It is rather unusual to receive information of this kind from a freight train conductor and I want you to know it is very much appreciated. Service of this kind cannot but help produce business for your company.

From the manager of a flour mill at Wellington, Kan.:

Your letter of the 5th inst. received and was very much surprised to receive a letter along that line, as it is the first one that I have the pleasure of receiving in the 25 years of my experience in this line of business.

From the traffic manager of an automobile company at Flint, Mich.:

I assure you that any future business we have moving from this plant will be routed so as to give your line a liberal share. Best wishes for the continued prosperity of yourself and members of your crew, together with that of the G. M. & N.

From the vice-president of a transfer company at Los Angeles, Cal.:

Note you are looking for more business. We are in just the same position at the present time. However, we can assure you that any business we may have available in your territory will be placed in line for No. 51.

From the traffic manager of a grain company at Chicago, Ill.:

How do you do, Mr. Woodward? We are very pleased to meet you. If you evolved the novel advertising stunt as reflected by your communication, the stockholders of the G. M. & N. have no business retaining you in the capacity of a conductor, they should place you in charge of solicitation.

From the purchasing agent of an irrigation association at Phoenix, Ariz.:

We wish to thank you for your report on B. & S. 6133 car electric tranformers which you recently hauled over your line; and wish to advise that we have instructed our traffic department to consider your company in further routing of freight shipments.

From the president of a machine tool plant at Columbus, Ohio:

It is certainly a pleasure to know a crew who find such pleasure in their work and who delight in boosting their employers, and we shall be very glad to co-operate in your endeavor to spread good will by stating that any freight going in your section shall be routed via G. M. & N.—whether the haul be short or long.

From the president of a coal company at Cincinnati, Ohio:

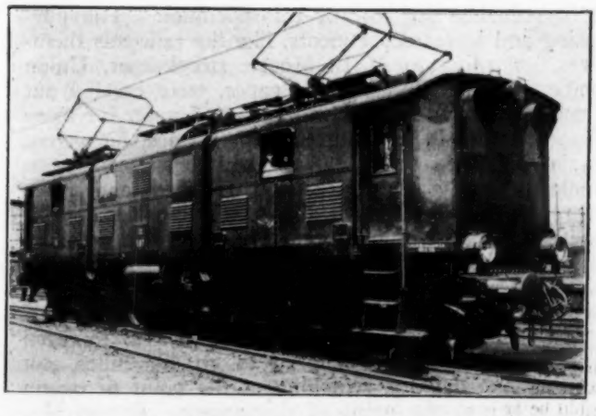
We have your letter of May 4 and while we may never make another shipment over your road, we think the expressions in your letter are a fine example of the interest you fellows take in your work and should be an example and inspiration to others.

From the traffic manager of a cereal company at Battle Creek, Mich.:

You are certainly establishing a fine reputation in your service, and your action in notifying shippers of the service performed is rather unique in railroad service.

There were hundreds of other letters, all of them expressing interest and promising business for the G. M. & N. The letters were brought to the attention of advertising associations by some of the shippers as a unique means of publicity, and one large steel company made one of the letters from Conductor Rucker of the G. M. & N. the subject of a long article in its magazine, entitled: "Are You a Rucker," wherein the spirit shown was highly commended.

The results of the campaign, both in publicity and in actual business secured have been far greater than was anticipated. The railroad is represented by a capable traffic organization, both on and off its rails, and by following up the leads given in the replies to the letters, they were able to establish valuable contacts and secure much new business as well. It has been a highly successful undertaking from every viewpoint.

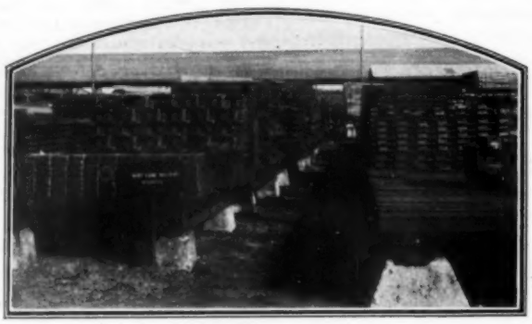


New Locomotive for Heavy Freight Duty in Germany

Younger P. and S. Men Air Views on Material Handling

Future leaders tell how to reduce costs under stimulus of national contest

THE purchasing and stores work of the future will be more efficient than at present and better training, more light on the art of buying, increased standardization, profit sharing and budgetary control are among the things needed to bring it about. This is what the younger men in the purchases and stores department, those who shoulder the details today and who are to be the leaders of tomorrow, think about conditions, according to the results of a contest on material handling held recently by the Purchases and Stores division of the American Railway Association.



Orderly Piling Promotes Efficiency

A total of 92 individual papers were submitted from 20 roads, of which 45 came from the Southern Pacific, 10 from the Northern Pacific, 8 from the Southern, 8 from the Union Pacific and 6 from the Canadian National. The Atlantic Coast Line, the Bessemer & Lake Erie, the Buffalo, Rochester & Pittsburgh, the Canadian Pacific, the Chicago, Burlington & Quincy, the Chicago Great Western, the Chicago, Rock Island & Pacific, the Denver & Rio Grande Western, the Erie, the Hocking Valley, the Illinois Central, the Kansas City Southern, the Missouri Pacific and the Pennsylvania, were also represented. Labor, obsolete material, control of line stocks, special materials, cost analyses, equipment purchases, supply train operation, stationery and accounting, are typical of the subjects discussed in these papers, which were prepared by 11 purchasing and stores department clerks, 14 chief clerks, 10 stockmen, 14 foremen, 5 general foremen and 29 local or division storekeepers. These include the authors of the two winning papers published in the *Railway Age* of May 28.

Improve Supply Service

In these papers emphasis was repeatedly laid on service in reducing the cost of transportation. The purchasing and stores departments, like the railroads themselves, according to A. B. Moore, storekeeper, Union Pacific, Portland, Ore., in his paper, were created out of a need for service and will be called upon for more efficient service in the future. This service, he writes, can be improved upon. The stores department must handle promptly all requisitions received and place orders without delay with the purchasing department for items not carried in stock. The purchasing department should place these orders with the least possible delay and when material is received by the stores department it should be delivered promptly. The operating department must help. It often takes four to seven days for a carload of material to go 400 miles, not counting one day for switching at the point of origin and another at the point of destination. If such deliveries were made on the same basis as revenue freight, store stocks could be reduced at least 10 per cent.

To the foregoing remarks on ordering material may be added the statement of G. E. Booth, chief clerk, Southern Pacific, West Oakland, Cal., that "If the making and handling of requisitions were given the proper attention in advance, a large percentage of the delays in getting material can be eliminated."

Waste Space Expensive

One of the most substantial contributions to the catalog of suggestions to further the efficiency of supply service came from R. J. Hencken, head purchase bill clerk, Southern Pacific, Sacramento, Cal., who wrote in part as follows:

Waste space is evidence of investment beyond requirements. By reducing this waste the cost of receiving and distribution are reduced as well as yearly pro-rated cost of the structure.

As nearly as possible all stores should be grouped together. This will reduce the time necessary to complete shipments. The work of stores delivery forces will be lessened since spurs for loading and receiving will serve a greater volume of stock. Cars consigned to different sections can be spotted on the same spur, thereby reducing the amount of switching. Cars are released quicker and increased service to outside points is obtained.

Trucks and tractors should be worked to capacity at all times. They should not be permitted to make return trips empty or to stand idle. If the delivery of material can be so specified and followed that material is received shortly before it is required, investment in stock can be held down.

Rejected Material Costly

Rejections of material, adds Mr. Hencken, have a disastrous effect on stock control. It is an additional expense which should be held as low as possible. Not only is rejected material an expense through inspection costs, but additional labor is required to receive and return as well as to store it.

While shippers are the offenders in the event of rejected material, they are not alone the sufferers. If a shipper is repeatedly an offender, he should be eliminated from the list of bidders. A shipper may be low in his prices, but if he furnishes material that cannot be used, the expense of handling offsets the lower price.

It is not necessary to wait until business decreases before reducing labor costs. A study should be made at all times. Time studies of work is a sure way of disclosing waste. When the cause is detected the remedy is easily found.

A great deal can be done toward reducing operating costs by reducing car weighing. Adherence to com-

mercial practices will help. Railroads, when in the position of carriers as well as when shippers, accept agreement weighing subject to verification by weighing and inspection bureaus. This being the accepted practice, there is nothing gained by railroads as purchasers weighing cars. The verification of the amount charged by shippers can be made by maintaining a list of average weights of each item and by verifying the weights periodically. This will reduce the number of cars weighed.

If the store expense were figured separately for each store a great deal could be done toward reducing costs of operation.

More Standardization

Standardization is an old topic, wrote G. A. Edwards, section stockman, Southern Pacific, but it is not received with much enthusiasm except in the store department. Not enough consideration is given to anything but the first cost of equipment. If heads of different departments could be shown the vast amount of money invested on account of using so many different kinds of equipment, standardization would increase.

The benefits from ordering stock items through standard specifications and blue prints are also large, is the reminder of William A. Buckley, equipment clerk, Illinois Central. Where this is done the material received is usually the kind of material that was ordered and the market is extended from coast to coast without jeopardizing quality.

Reduce Surpluses

Thousands of dollars can be saved annually by the better handling of surplus and inactive material, suggested L. G. Alexander, section stockman, Southern Pacific, Portland, Ore. The section stockmen should visit the scrap yard at least once a month and make a thorough inspection of all material. Large quantities of material coming to the stores from the line are scrap which should not be mixed with serviceable material.

A standardized master stock book should be maintained, outlined A. G. Bohorfaush, division storekeeper, Southern, Birmingham, Ala. It should be all-embracing. All corrections, additions and deletions should be passed by a committee composed of the proper mechanical and store department officers. Requisitions originating in division offices for material not in stock book should be referred to a committee for investigation. A minimum limit should be established for every item and when that limit is reached it should be reported.

It is a physical impossibility for any storekeeper to keep his stock in order if he is cramped for room or denied facilities in keeping with modern practice. Efficiency is impaired in an inverse ratio to the extent that proper bins, platforms, racks, ramps, trucks, elevators, cranes, etc., are denied.

Bin Pricing Favored

Storekeepers are going to be forced to price material as it is received, continued Mr. Bohorfaush. No other methods can or will give complete satisfaction. The advantage of pricing the material as it is received and indicating the price on it will more than offset the cost involved.

Marvin O. Weber, division storekeeper, Northern Pacific, Dilworth, Minn., qualified what has been said about master stock books. The master stock book, he wrote, is important but if not used wisely can do considerable harm. When a shortage exists the master book is invaluable as an aid in transferring material from store to store, but in case of surplus materials care should be exercised to see that the quantities of material transferred are large enough to make the operation pay.

It would be an ideal condition if the various work programs could be planned ahead for 12 months and followed through to conclusion, ventured J. R. Stokes, assistant division storekeeper, Illinois Central. This would assist not only in the reduction of stock balances but would be a means of stabilizing the forces employed.

A comparison between different railroads, he added, is not the first proposition that ever confronted the supply departments which appeared impossible in the beginning, but the cost of handling materials should include all expense incidental to receiving, issuing, and storing materials and supplies, regardless of the departments involved prior to issuing the material to the using departments.

One of the best methods of effecting economies to the railroads, advised F. N. Dobbs, division storekeeper, Southern Pacific, Portland, Ore., is by completely assembling all material for specific work before shipping. It affords better control, helps to avoid expensive delays to the using departments and aids in holding down the stock balance.

The study of stores having a rapid turnover, declared J. S. Gabriel, division storekeeper, Denver & Rio Grande Western, Salt Lake City, Utah, will disclose that the main contributing factor is the absence of special material. Special material not only increases the carrying costs, but hinders the storekeeper in showing a reasonable per cent of disbursements when his monthly balance sheet statement is prepared. Unless depreciation is allowed on certain items by writing the price down the annual inventory will be fictitious. The general practice is to figure the turnover or percentage of disbursement on the total value of all material in stock. Since the attempt to control it by curtailing purchases of necessary common material would result in serious delay to other departments, special material should be checked carefully to determine the amounts necessary, the unit value and the most suitable location to the store.

Scrap Bins are Gold Mines

Money performs no service while it lies on the shelves of the storeroom, wrote J. S. Sewall, division storekeeper, Northern Pacific, Glendive, Mont.

"There is no more sure or important way to save money than by not spending it in the first place.

"To know when to order and when not to order is rendered easier by a knowledge of how the material is to be used.

"The real gold mines are the scrap bins. The activities of our reclamation plant are proof that much goes into scrap that has not served its useful life."

The conclusion of N. B. Coggins, division storekeeper, Southern, Selma, Ala., was that full pages of instructions may be issued but unless you invite the aid of users in reducing costs you will never get very far.

The application of economics to supply service is not appreciated by the employees, added James Taylor, section stockman, Northern Pacific, Tacoma, Wash. The first requisite is to inculcate in him the business spirit whereby stocks on hand shall be measured at their value and not as so many pieces or pounds of material. This creates a new atmosphere which has a beneficial effect.

If an item of stock continues unchanged for a considerable time, Mr. Taylor further suggested a thorough

investigation with a view to its disposition should be made, and thus relieve the accounts of material which may otherwise remain dormant for years. Experience at division points shows that numerous items ordered on requisitions ultimately return to the point of issue unused. Much depends on the information gained from the foremen in compiling monthly requisitions to replenish stock, but this information should be accepted with discretion because of their desire to be sure of having adequate stocks on hand at all times. All articles carried in stock should be figured at their intrinsic values. The most successful storekeeper is one who can maintain a high standard of service on a minimum stock.

A. J. Hanlon, storekeeper, Pennsylvania at Camden, N. J., among others saw merit in purchase budgets. The principle of budgeting purchases, he wrote in a paper devoted entirely to this subject, is a live issue. It is destined to have a far-reaching effect. Its application in one form or another has come to be the underlying procedure. But the storekeeper has not taken the active participation in this scheme that he should take.

Profit Sharing Urged

Like H. F. Burnett of the Kansas City Southern, the author of one of the two winning papers of the contest, H. C. Lyon, of the Bessemer & Lake Erie, laid stress on labor. During the past two years, said Mr. Lyon, operating costs of railway storerooms have been reduced through the development and use of mechanical devices such as cranes, tractors, conveyors and the systems of storing materials in trays and unit piling, but labor, which entails the greatest cost, is the field in which little has been done. Profit-sharing is advocated by the author to correct this. Propose to him, writes Mr. Lyon, that if through more efficient effort on his part the annual cost of maintaining the stores department is reduced the company will share with him a portion of such savings. A plan of this sort would stimulate labor. The average worker performs his task day by day in the same manner with no thought of an easier way to do it. Why should he try to do it differently? If he manages to find a way to save two hours in an assignment of eight, he is only given more work for the extra two hours. He knows that he can only earn so much and the conclusion is that he might as well take his time and make the job as easy as possible. Show him that better work on his part will mean greater compensation in proportion to his increased productivity and he will become an entirely different worker. Some will have suggestions to offer that will be of great benefit.

More Light on Buying

The need of more attention to the details and problems of the purchasing agent was urged by E. T. Monroe, Buffalo, Rochester & Pittsburgh. "It has been my privilege to attend several sessions of the annual conventions of purchasing and stores officers," he writes, "but I have usually returned home with a doubt as to whether these conventions are taking full advantage of their opportunities. Storekeepers return home with new ideas to assist them in their work. I am not so certain of the purchasing agent. We hear much about purchasing office records, statistics, etc., at these conventions. These are only secondary propositions. The purchasing agent's real job is the purchase of material. Why not have something that will assist him? Is it not strange that with such a group in annual session, a group whose total purchases run into millions of dollars, little is said on market conditions? No time is given to the study or analysis of the conditions which the purchasing agent must face day after day.

Know Market Conditions

"Send the buyer back home with a true knowledge of the existing market conditions and savings will be created which will compensate the roads many times for the expense incurred. The valuable purchasing agent is not always the one that knows how to buy but when to buy."

Double and Triple Crewing Switch Engines on the Frisco

THE St. Louis-San Francisco is now double and triple crewing 227 switch engine crews out of the total of 245 crews in switching service on the road. This leaves 18 engines that are single crewed because the jobs do not match up for more than one trick or because the engines are assigned on industry jobs which are worked only eight hours per day. Some of the switch engines are coal burners and they are being worked 24 hours without fire cleaning. This makes a considerable saving in fuel, roundhouse expenses and congestion at cinder pits. It reduces the number of engines in service and enables the railroad to save money because the firemen take better care of the fires on double and triple-crewed engines.

What Can Be Done

As an indication of what can be done by supervision and co-operation from the engine crews, engine 861 at the Neodesha, Kans., yard was started to work at 10:30 p. m., April 5, and worked continuously until 6:30 a. m., May 5, a total of 91 eight-hour shifts, or 728 hours on duty, without the fire being knocked out of the engine. This engine still had a clean boiler and fire when taken out of service. No trouble was experienced with the fire until April 15, at which time the fire was cleaned, and after that date it was cleaned twice. Cleaning the fire consisted of taking a few clinkers out and shaking the fire down. Kansas mine-run coal was used. The engine was turned in every noon or meal period, and given an inspection and the grates shaken lightly. No trouble was experienced with the engine steaming on any occasion, nor was there any trouble with the engine foaming. During the entire performance the engine was withdrawn from service only 1 hr. 25 min. because of a broken spring, at which time it was relieved by a road engine until the new spring could be applied.

Performance

During the time of this performance, the engine burned 234 tons of coal, made 4,368 switch-engine-miles, or an average of 108 lb. of coal per switch-engine mile. The previous average of engine 861 in this same service was 122 lb. of coal per switch-engine mile for the months of February and March. This made a difference of 30 tons of coal.

After working this engine continuously for 30 days only 10 flues were found stopped up when taken into the roundhouse. The washout plugs were removed and the boiler did not appear to contain any more mud and scale than at the ordinary washouts on weekly periods. This engine was blown out on an average of eight minutes on each shift.

Contact System Mounted on Springs

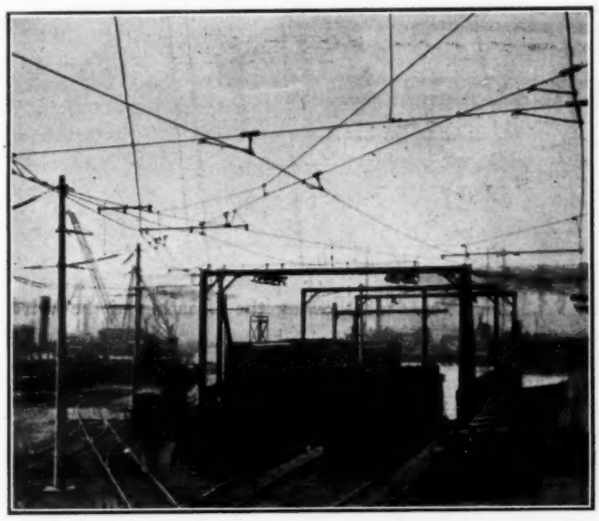
Electrified Lackawanna yard has overhead system installed on soft ground and designed to compensate for ice loading

By F. R. Thompson

Westinghouse Electric & Manufacturing Company

THE law of May, 1924, which required the railroads in New York City to employ electricity for operating their motive power units brought out some novel ideas in overhead contact line construction. The law was passed as an aid to city planning, with the object of eliminating one of the causes of smoke and soot in the atmosphere of the metropolitan district. By substituting electric locomotives it was hoped that the many small freight yards, which supply metropolitan New York with such commodities as foodstuffs, lumber, furniture, automobiles, coal, oil, etc., would cease to be a factor in the problem of smoke elimination.

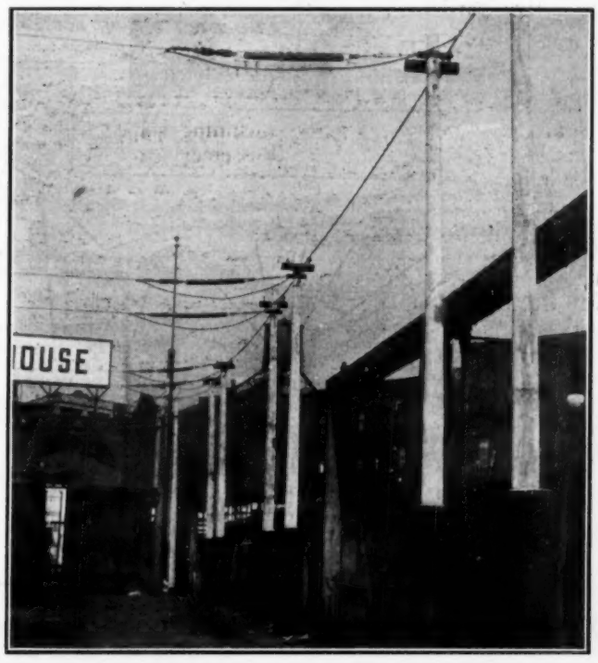
The Delaware, Lackawanna & Western decided to employ a straight electric overhead contact system for the electrification of its Wallabout yard in Brooklyn. Before making a final decision much thought was given to the simplest and most economical type of overhead construction taking into account the many clearance problems in this yard, as well as the uncertain nature of the supporting soil.



The Network of Wires Just in Front of the Transfer Bridge —The Type of Trolley Suspension Used Permits Pantograph Operation Under Direct Suspension of the Contact Wire

The yard includes unusual track facilities for efficient unloading of cars, and presents many difficulties to the contact system. A large part of the track must be adjacent to a loading bay where delivery trucks drive alongside the cars for loading and unloading. Because of this it is necessary to keep the drive-way free from supports for the overhead system, thus introducing the problem of erecting the overhead with a minimum number of supporting points. The freight house was suitable for attaching supports, but the remainder of the supporting structures had to be located at the most advantageous point, and wherever there was clearance.

The Wallabout yard was built to a great extent on piles and then filled with earth, rock, and other material. Because of this the foundation bearing power was very poor, constituting one of the greatest problems encountered. The tracks extend to the limiting edge of the canal at all points, and there was little opportunity for backguying the supports. For this reason it was necessary to keep the tensions in the contact and supporting wires as low as possible. It was, therefore, essential to use the lightest possible material consistent with satisfactory operation and strength. The frequent reversing of the locomotive made a pantograph current collector desirable and the power demands of the locomotive came within the safe application of a single-shoe pantograph having a pressure against the contact wire of 15 to 18 pounds. The Westinghouse 516-B pantograph was used with this contact system.



Springs Support the Contact Wires from the Hollowspun Concrete Poles—Note Feeder and Tap to Each Wire— Most of the Poles Shown Have Protection from Damage by Vehicles

Direct suspension from long cross-spans was settled

on as the most desirable construction. The long cross-spans were designed for low tension in the wires thus reducing loads on the supporting poles and footings. As the load on the cross-span is a direct function of the concentrated weight at the contact wire supports, little gain in load reduction is obtained with light wire construction if ice load has to be considered. It was decided, therefore, to use the lightest practical contact wire, 2/0 size, and to arrange for a minimum cross-span tension with this wire load only. By means of a special type of load limiting device the tension may be limited to a maximum value. As the ice load collects on the wires, the special device permits the cross-span to lower all of the contact wires on the particular span —a temporary condition which may be overcome by passing current through the wires to loosen the ice. Due to the limited length of cross-span, it was found that springs could supply all the necessary flexibility. At the contact wire terminating points, springs were used to add flexibility to the contact wire as well as to the cross-span.

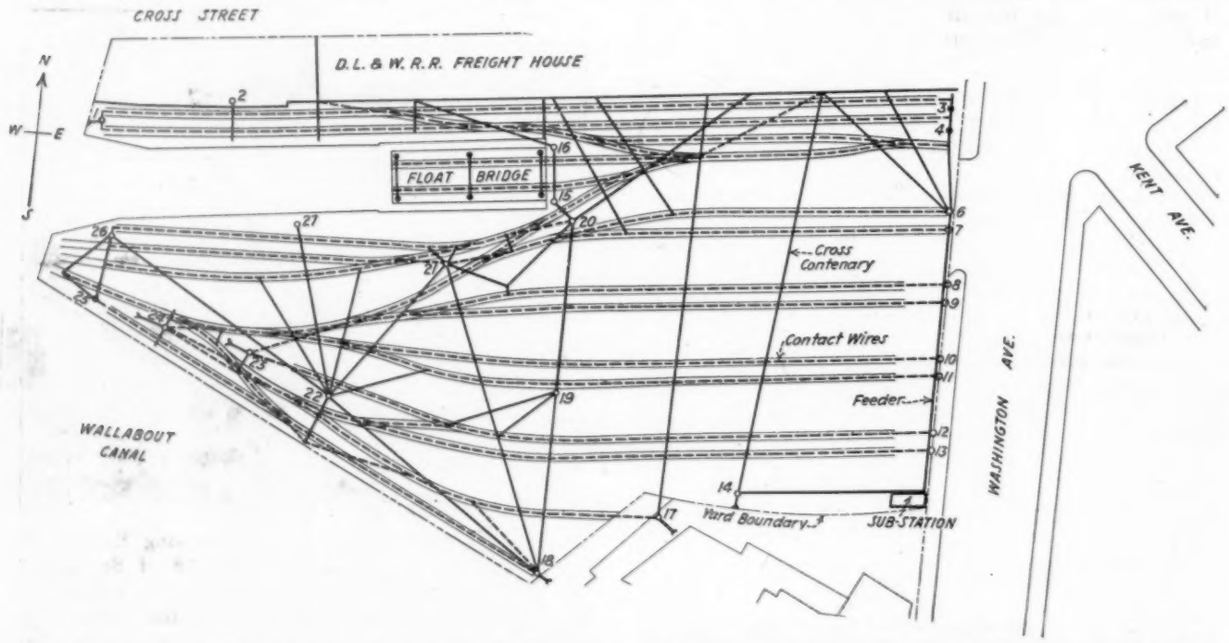


Diagram of the Track Layout and Overhead Contact System of the Wallabout Terminal Showing the Location of the Wire Supports Both on Buildings and Poles

Concrete Poles Used

The contact system was erected at a normal height of 24 feet above the rail to give the proper clearance in case it became necessary for a trainman to stand on top of the cars in transmitting signals to the engineman.

Only 26 poles were required for erecting the contact system over 6,600 ft. of track. Hollowspun concrete poles were selected for their high strength, long life, good appearance and uniform quality. These poles have sufficient strength to be self-supporting, but most of them required back-guys due to the poor bearing power of the soil foundation. The object of the back-guy was not to support the pole itself, but rather to distribute the load on the foundation over a greater area. All of the concrete poles were set 5 ft. 6 in. below the soil surface in a block of concrete 6 ft. deep, the top area varying with the load on the pole. The back-guy was also supported in a concrete block separate from the pole foundation, increasing the effective area of the foundation in resisting the wire stresses. The concrete poles are flexible and bend under stress.

At three points there were some difficulties in applying concrete poles for special supports and steel beams were substituted for concrete poles at these locations making a total of 20 concrete poles and three steel structures. As some of these poles could not be entirely removed from the loading bays without introducing undesirable features, it was necessary to protect them from damage by trucks. This was accomplished by encasing the pole from the ground line to a height of 7 ft. above ground by a sheet steel case which was filled with concrete several inches thick.

A number of high poles were required to allow for sag. The cost was reduced as far as possible, however, by using the minimum height and strength pole at each location, without making any attempt to standardize on one type of pole. For this reason the poles vary from the smallest size of a 30 ft. length and a minimum breaking load of 1,500 lb. (such as poles 7 to 13 shown in the diagram) to the largest size of a 45 ft. length and with a minimum breaking load of 6,000 lb. (poles 14 and 17).

Springs Limit Tension

The cross-span supports consist of a cross-catenary wire and a steady wire. The special tension limiting device consists of a spring arrangement made up of one or more springs of uniform characteristics. By means of one, two, or more springs in series, parallel and series-parallel, it was possible to employ only one size of spring and at the same time take care of tensions varying from 400 to 2,500 lb. The springs are made of 9/16 in. diameter wire and are composed of 64 coils, each 4 in. outside diameter. They have full end loops and are about 45 in. long without load, and 65½ in. long with the maximum load of 1,130 lb. This maximum load corresponds to a fibre stress of 55,800 lb. per square inch, which is within satisfactory limitations for springs in this application. The maximum stress occurs only with National Safety Code "Class B" loading which

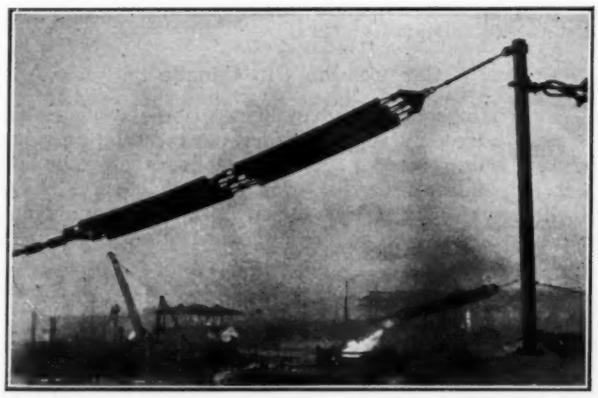
condition does not occur very frequently in the territory about the Wallabout yard.

The tension in the contact wire was adjusted for normal conditions at 500 lb. Where the contact wire was dead ended, as on pole 8, one spring in series was sufficient to give the necessary flexibility. The cross-span from pole 17 to the freight house has the greatest tension in the yard. This span is 265 ft. long and supports the contact wire of 15 tracks. Normally, the cross-catenary wire has a tension of about 1,850 lb. and a sag of 12 ft., but under ice load conditions the special spring devices increase the sag to 17 ft. and the tension to a maximum of 2,500 lb. Normally the steady wire is not stressed to any great extent, but it is arranged so that it shares part of the ice load with the catenary. The maximum tension of the catenary requires three single springs in parallel to prevent overstressing while four springs in series are necessary to give the proper sag under maximum load conditions. This requires a total of twelve springs for the one span; six of which are mounted at pole 17 and six on the freight house support. No springs are required in the steady wire. The springs are held in position by an armor plate yoke such as commonly used for supporting suspension insulators. The catenary span, pole 22 to pole 26, requires two springs in series and two springs in parallel to give the proper characteristics for limiting the tension, while the span pole 21 to pole 22 requires only one spring in series. A total of 68 springs were used for the whole yard.

The maximum length of contact wire from one end of the yard to the other is only 550 ft. so that the change in length of the contact wire from summer to winter temperatures is only a matter of a few inches. For this reason the problem of stresses caused by changes in temperature is almost negligible in comparison with the changes due to the addition of ice loading. On these stretches it was necessary to use only one spring to permit the sag increase which keeps the tension within the designed limitations.

Special Requirements

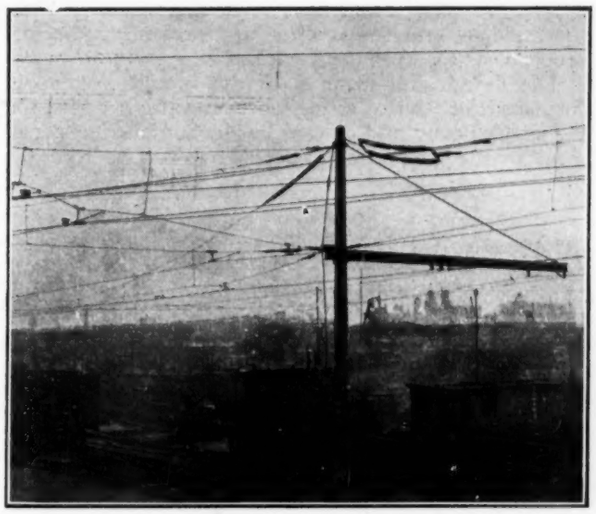
The problem of keeping the contact wire over the track on the many curves of varying radius was complicated by the lack of points for attaching the pull-offs. Considerable ingenuity was required to erect the contact wire in the section adjacent to the Wallabout canal where it was impossible to locate poles. Ships and barges move almost continuously about this side of the yard and the storms frequently crash boats against the supporting piles. The boats have quite a large overhang which at high tide would damage or shear off any supports within several feet of the bulkhead line. In addition the entrance to the canal is narrow and it was thought possible that the jarring of the bulkhead would cause the poles to "whip" back and forth and possibly destroy themselves. For these reasons the poles had to be set back as far as possible from the waterline, and bracket arms were used for supporting the contact system on the outer track. The bracket arm used on pole 1 is so arranged that if one contact wire breaks, the tension in the other wire will be relieved by the bracket arm turning about the pole, thereby relieving the concrete pole of any torsional stresses for which it was not designed.



A Network of the Tension Limiting Springs Mounted at the Freight House

Cars from Float

The freight cars brought into this yard are received from a float which docks at the transfer bridge. The variations in tide at this location cause the outer end of the transfer bridge to rise and fall, the normal tide change being about four to six feet and the maximum up to ten or twelve feet. This introduces another problem of providing a contact system for the locomotive on the transfer bridge and at the transition section between the bridge and the yard. Two specially formed tee sections are mounted parallel about 6 in. apart to provide a contact over the transition junction during all stages of the tide. A disconnect switch is mounted at the yard entrance to cut off the contact system on the bridge in case the bridge requires repairs.



A Portion of the Contact System Showing Bracket Pole, Typical Cross Spans and the Method of Supporting the Contact Wire by Cross Catenary and Steady to Keep it Over the Center of the Track

Except for the large special bracket arms and the coil springs, the fittings used in erecting the contact system were of non-corrosive material or plated to prevent undue deterioration which might be caused by salt air and salt fogs. The bracket arms were given a coat of lead paint, while the special springs were treated with an aluminum paint.

The insulation of the contact system consists of two strain insulators in series at the ends of each of the contact wires, the cross-catenary, and steady wires. Two insulators were used because the concrete pole with its steel reinforcing is considered in the same class of conductors as the steel pole and two insulators are used for

safety purposes. The substation potential is 600 volts direct current and the contact wires on poles 3 to 13 inclusive are connected by a feeder which connects the yard with the substation. As only one locomotive operates in the yard the voltage drop in the rails is not great, and it was necessary to bond only one rail by means of 4/0 copper bonds with pin type terminals around the fish plates and using long bonds of the same size at turnouts. The pin type of terminal was considered the more applicable due to the necessity of frequently replacing rails in the yard.

Now in Operation

The contact system described above has now been in operation for several months and the complicated nature of the layout together with the application of hollowspun concrete poles, and the special coil spring load limiting device should furnish a severe test of the suitability and practicability of these new features in applying electric locomotives to small terminal yards of the same general construction and presenting the same problems as the Wallabout yard.

The design and material of the contact system was furnished by the Westinghouse Electric & Manufacturing Company and erected by the engineering department of the Delaware, Lackawanna & Western.

Adjustable Locomotive Cab Seat Development

A COMBINATION adjustable locomotive cab seat and welded steel box for tools, clothes and emergency equipment has been developed by the Gustin-Bacon Manufacturing Company, Kansas City, Mo. The seat may be adjusted for any desired height or tilt.

A Combination Adjustable Cab Seat and Welded Steel Box for Tools, Clothes and Emergency Equipment

There are four one-inch adjustments for height. The seat swings up on the front hinges to give access to the welded steel box. The seat cushion is built up with a double set of coil springs to give easy riding qualities for either light or heavy men.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended July 30 amounted to 1,045,621 cars, a decrease of 50,376 cars as compared with the corresponding week of last year but of only five cars as compared with 1925. Coal loading showed a further decrease and was 33,907 cars less than for the corresponding week of 1926. The loadings of all commodities were smaller, with the exception of less-than-car-load merchandise and miscellaneous freight, which exceeded loadings in the corresponding week of last year by small margins. Loadings in all districts, except the southern, continued to show decreases as compared with a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, July 30, 1927

Districts	1927	1926	1925
Eastern	235,604	251,107	249,336
Allegheny	212,774	224,600	209,942
Pocahontas	59,926	61,840	54,596
Southern	151,362	148,749	145,791
Northwestern	159,943	167,780	157,969
Central Western	150,123	162,205	149,589
Southwestern	75,889	79,716	78,403
Total Western Districts	385,955	409,701	385,961
Total all roads	1,045,621	1,095,997	1,045,626
Commodities			
Grain and grain products	58,689	62,739	51,027
Live stock	26,432	27,034	27,812
Coal	158,553	192,454	182,217
Coke	9,525	11,386	9,404
Forest products	69,467	72,078	71,533
Ore	64,178	75,118	63,637
Mdse. L. C. L.	257,741	256,250	255,586
Miscellaneous	401,036	398,938	384,410
July 30	1,045,621	1,095,997	1,045,626
July 23	1,012,424	1,078,193	1,033,519
July 16	1,016,782	1,076,372	1,012,854
July 9	839,308	897,556	986,893
July 2	1,021,262	1,065,641	866,199
Cumulative total, 31 weeks	30,262,123	30,222,910	29,273,581

The freight car surplus for the week ended July 22 averaged 291,387 cars, a decrease of 8,561 cars as compared with the preceding week. The surplus included 159,840 box cars, 86,332, coal cars, 22,296 stock cars and 15,528 refrigerator cars.

Car Loadings in Canada

Car loadings on Canadian lines for the week ended July 30 were only slightly under those of the previous week. Grain showed a decline of 497 cars, more or less seasonal and merchandise was down 321 cars. Live stock increased by 304 cars, coal by 395 cars and pulpwood by 218 cars. The increase over last year's loadings was 812 cars.

	Total for Canada			Cumulative Totals to Date	
Commodities	July 30, 1927	July 23, 1927	July 31, 1926	1927	1926
Grain and Grain Products	4,183	4,680	3,798	209,471	200,304
Live Stock	2,272	1,968	2,305	58,139	59,738
Coal	7,213	6,818	6,716	191,705	150,413
Coke	254	290	231	9,417	11,322
Lumber	4,376	4,552	4,256	111,043	109,002
Pulpwood	2,268	2,050	2,695	109,268	89,237
Pulp and Paper	2,198	2,402	2,051	67,125	74,504
Other Forest Products	2,586	2,510	2,629	93,099	97,566
Ore	1,793	1,614	2,217	46,801	48,430
Merchandise, l. c. l.	17,934	18,255	16,798	506,125	478,818
Miscellaneous	17,178	17,301	17,747	416,817	406,185
Total Cars Loaded	62,255	62,440	61,443	1,819,010	1,725,519
Total Cars Received from Connections	35,960	36,712	37,347	1,142,206	1,117,094

Special Car Equipment for Union Pacific

THE Los Angeles & Salt Lake unit of the Union Pacific has built and converted at the Los Angeles, Cal., shops a number of special cars, representing a departure from former methods of construction, which are being favorably received by the departments using them.

Outfit Bunk and Dining Cars

One hundred outfit bunk cars have been built on 100,000-lb. capacity steel underframes. These cars, one of which is illustrated, have no side doors, but are provided with vestibule platforms on the entrance ends. The opposite end of each car has a door, but is equipped with a stationary screen which will not permit any one to enter or leave the car from this end. This safety device prevents occupants from stepping out between the cars while they are being moved, and at the same time in hot weather permits the door being opened to obtain proper ventilation. The kitchen and lounging room is equipped with two tables, four benches and a heating stove. In the bunk room, the cars are equipped with eight stationary steel bunks and eight individual lockers in order that each man may have a private locker. The cars are comfortable and warm, being thoroughly insulated with red rosin paper between the siding and lining. All windows and doors are screened.

With the steel underframes and heavy construction

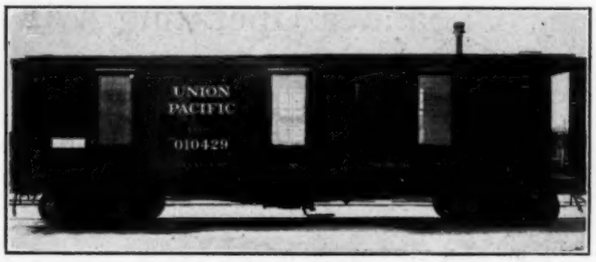
One of Nine Drover Service Cars Also Provided with Steel Underframe

of the cars they can be moved with safety in any part of a train and this avoids extra switching en route. The comfort and safety features of the cars add greatly to the morale of the men engaged in track, signal and bridge work, tending to reduce the labor turnover in these gangs materially.

Ten passenger car dining cars were retired and converted into dining cars for bridge and work gangs. These cars are equipped with large refrigerators for storing meats, vegetables, etc., and each car has a storeroom, a living room, a large kitchen and a dining room. Overhead water tanks are installed and a cooking stove equipped with water back furnishes an adequate supply of hot water.

Drover Service Cars

Nine steel underframe drover service cars have recently been built, using 100,000-lb. capacity steel underframes. The super-structure or body of each car is



L. A. & S. L. Outfit Bunk Car Built on 100,000-lb. Capacity Steel Underframe

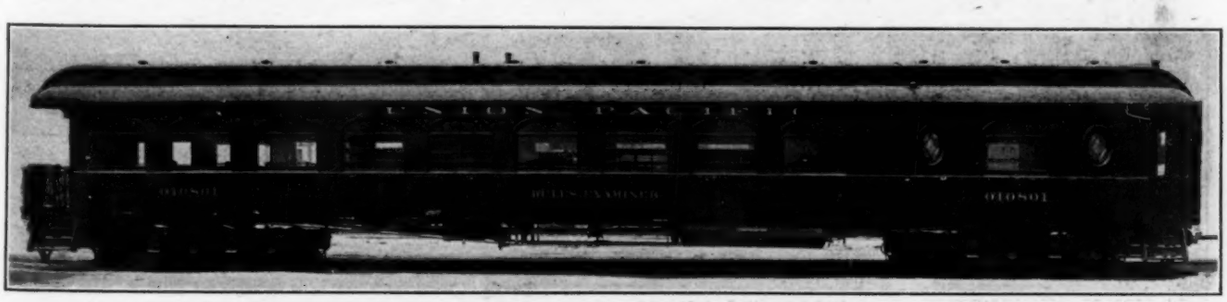
sheeted with red rosin paper between the siding and lining for insulation. The seats are of the built-in type and the car will provide sleeping accommodations for ten men. There are no removable or loose parts in the car body. The doors and windows are barred to prevent occupants from getting hurt and in fact the cars are designed and built with every provision for the safety of the occupants.

Before these cars were built, ordinary light passenger coaches were used for stockmen to ride in, but they did not furnish the comfort of the special drover cars, which, because of their substantial construction can be handled in any part of a train.

Rules Examiner's Car

The rules-examiner's car illustrated was converted from a 78-ft. parlor car. It contains a class room with charts, miniature signals electrically lighted, and miniature tracks with small flags so the instructor may permit the student to do the flagging himself and receive practical instruction if needed. There is a smaller private room fitted up so that the instructor may give personal instruction to a man, when necessary, away from the class room. The car has staterooms for the instructor and secretary. This car has already demonstrated its practicability and is attended regularly by men who are eager to become better informed on the rules. In general the men show their appreciation of this well-equipped car by attending the lectures regularly and looking up the instructor to get help on anything that may not be clear to them in the book of rules.

In addition to the special equipment mentioned, one

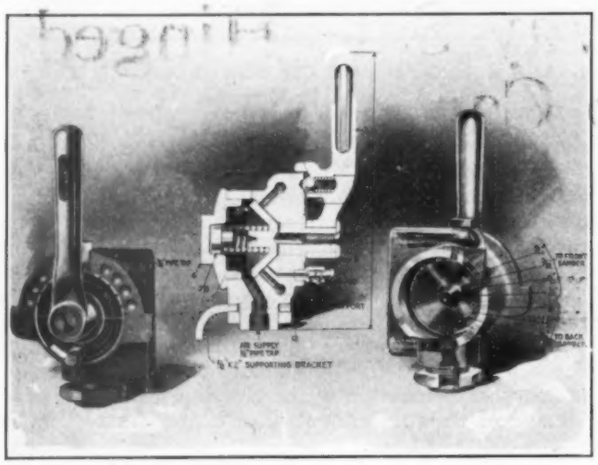


Rules Examiner Car Converted from 78-ft. Parlor Car at Los Angeles Shops

scale inspector's car, two cars for electrical road gang and maintenance of way tool cars have been designed and constructed. An air brake instruction car, also designed and built on the L. A. & S. L. at Los Angeles, was described in an article appearing in the *Railway Age* of February 12, 1927, page 475.

Viloco Redesigned and Sander Operating Valve

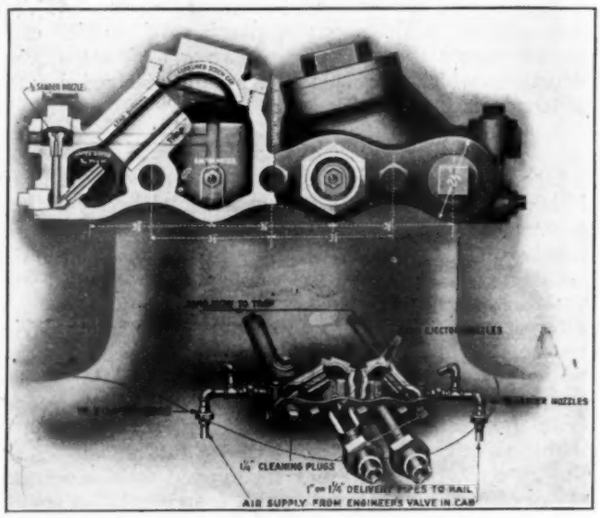
THE Viloco Railway Equipment Company, 14 East Jackson boulevard, Chicago, has placed on the market a redesigned sanding equipment which is shown in the accompanying illustrations. The duplex engineman's valve with a warning attachment for operating the pneumatic sanders has four graduated po-



Viloco Type FL Duplex Engineman's Valve, with a Warning Attachment, for Operating Pneumatic Sanders

sitions, for both front and rear sander. The graduations are effected by ports of different diameters through the valve. The ports register with notches on the quadrant, enabling the engineman to apply the sander gradually to its full capacity. The air is admitted through the bottom of the valve, where provision is made for securing the valve to a supporting bracket attached to the boiler head.

The warning attachment operates as soon as the handle is moved off the center notch of the quadrant and serves as a warning to the engineman that the sander

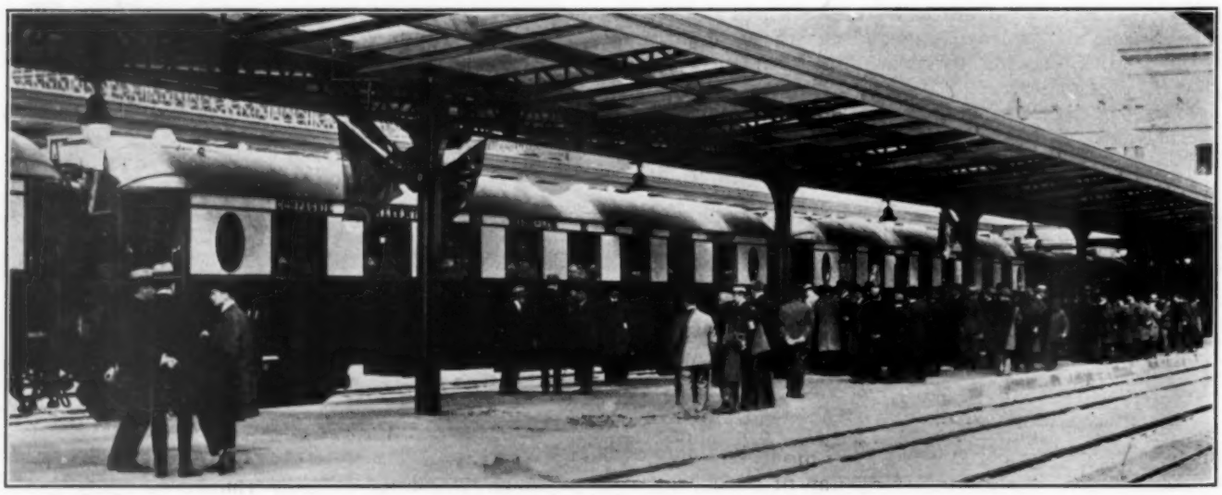


The Viloco Style FL-312 Double Sander with Four Delivery Pipes

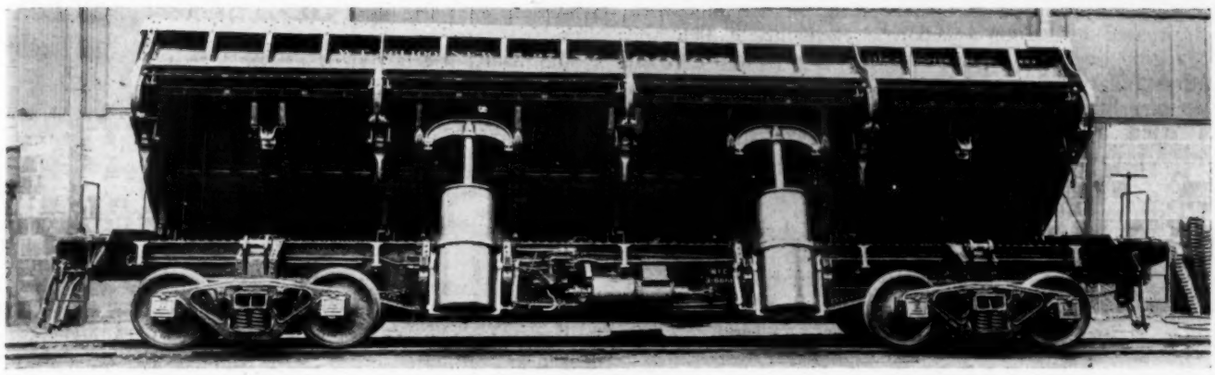
is in operation. The warning port can be closed by a slight pressure on the warning valve, but as soon as this pressure is removed, the warning reminds the engineman instantly that the sander is in operation.

The improvement in the sander consists of locating the sand ejector nozzles within the trap, opposite the upper ends of the two delivery pipes, insuring forceful delivery of sand through the delivery pipes to the point of contact between the driving wheels and the rail, which feature likewise provides a means for cleaning out the delivery pipes should they have a tendency to become clogged. To prevent the sander nozzles from becoming inoperative, the nozzles are located above the sand level in the trap. Lifter nozzles have also been provided to regulate the amount of sand delivered.

The sanders are furnished single, double, triple and quadruple for any sanding arrangement desired.



New "Wagon Lits" Pullman Train in Service Between Boulogne (London Connection) and Vichy on the P. L. M., Paris



Dump Car Built for the New York Central by the Magor Car Corporation, New York

Automatic Two-Way Side Hinged Dump Car

Design permits use in either dump car or regular revenue service—Capacity of 30 cu. yd.

THE Magor Car Corporation, 30 Church street, New York, has developed a new type of dump car which is a departure in many respects from any of the types it has manufactured heretofore. The builders, in designing this car, have eliminated entirely all forms of tension and compression locks and substitutes for them, and have developed a new principle of construction whereby the body has complete and stable support at all times during transit on the center sill of the car underframe. With this arrangement it is impossible for the cars to dump prematurely or while in transit. The new Magor cars are designed not alone for construction work and for handling material at terminals, but more particularly to meet the need for a general service car which can be adapted for both construction and maintenance work and which at the same time will be suitable for regular revenue service when not in use in construction or maintenance service. A number of the new type Magor dump cars were recently delivered to the New York Central and the Boston & Maine.

While the new car embodies a number of novel features in dump car design, such as the side and end construction, the principal new feature lies in the operating mechanism of the side doors. Referring to the illustration showing an end view of the car, it will be noted that the door arm is a one-piece casting which is riveted to and forms a part of the car door. This construction relieves the operating mechanism of all stresses set up by any distortion which may occur in the car body itself.

At the present time these cars are manufactured with a capacity of 30 cu. yd. They can be dumped to either side and can be stopped at any point in the dumping movement and righted. The special valve mechanism permits the dumping of an entire train, a single car, or any number of cars, irrespective of their location in the train. This is accomplished by setting the valve mechanism on each car to suit, the dumping mechanism being controlled by a valve located in the cab of the locomotive.

The general dimensions of the dump car compare favorably with types of open top cars used regularly in revenue service. The body rests directly on the center sill, which gives practically the same load-carrying qualities as a gondola car of standard design, with practically the same height from the rail of the center of gravity when loaded. The general dimensions of the dump car are given in the following table.

Capacity	30 cu. yd., water level
Height above top of rail	7 ft. 9⅞ in.
Width, overall	10 ft. 4 in.
Length, inside of body	34 ft. 6 in.
Depth, inside of body	2 ft. 9 in.
Distance between truck centers	25 ft. 6 in.
Truck wheel base	5 ft. 6 in.
Dumping angle	Approximately 50 deg. from horizontal
Load capacity	100,000 lb.
Approximate weight	69,000 lb.

The doors are opened and closed automatically when the car is dumped by means of control arms of cast steel, one control arm being located opposite each door arm as shown in one of the illustrations. The control arms are pivoted to the car body and are provided with a roller at the outer end which bears against the door arm. The whole mechanism is arranged to cause the doors to open gradually and close when the car is dumped and righted. The opposite door is positively locked automatically during the process of dumping and both doors are positively locked automatically when the car is righted. The doors lie in a plane parallel with the car floor when the car is in the dumping position.

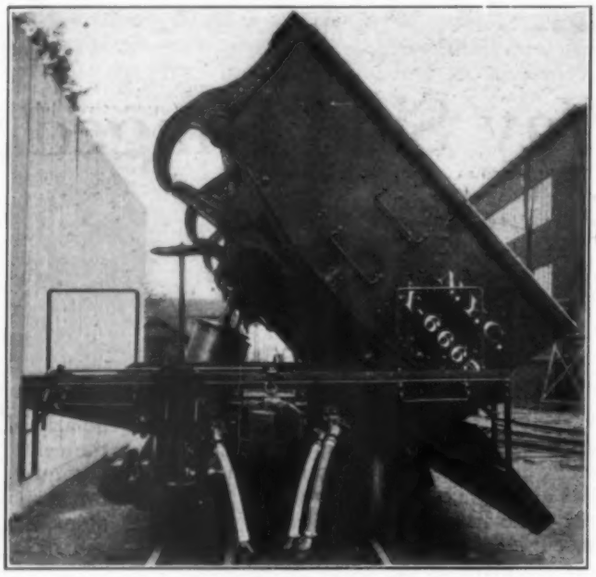
The dumping mechanism is actuated by means of two air-operated pistons in semi-steel cylinders. Two cylinders are located on each side of the car. They are carried in trunnioned bearings on cast steel brackets extending out from the center sill. The piston rod in each cylinder is secured to a cast steel yoke so designed as to compensate for the varying angularity of the cylinder when dumping the car. This yoke is carried in heavy semi-steel bearing boxes bolted to the bottom of the body diaphragm. The bearing boxes have integral body seats which rest on the cylinder trunnion bearings.

Each car is provided with a Westinghouse reservoir

secured to the side of the center sill and is supplied with compressed air from a separate train line called the "charging line." This line is of 1¼-in. pipe and is fitted with standard hose and couplings. In addition to the charging line and the regular brake train line, there is an "operating line" which extends the length of the car and is provided with signal hose and coupling.

Automatic Control

The dumping mechanism is operated by a three-way valve located near the end sill and can be operated from either side of the car. This valve automatically controls a valve, located near the center of the car, which releases air from the reservoir to the dumping cylinders. The



End View of the Car in the Dumping Position

automatic control valve controls the flow of air to either the right-hand or left-hand cylinders. It is fitted with an operating rod provided with handles so arranged as to indicate by their position the setting of the valve. If the handle of the operating control valve rod points upward on the left-hand side of the car it indicates that the valve is set to operate the left-hand cylinders, thus dumping the car to the right side of the track.

With the three-way valve, located near the end sill, in neutral position, the dumping of the cars can be controlled from the locomotive by the flow of air through the operating line direct to the automatic valve, thus following the same sequence as when each car is operated individually by hand. The air brake equipment is independent of all other piping on the car.

Body Construction and Special Equipment

The car body is of all steel construction having an inside length of 34 ft. 6 in. at the top and an inside length of 33 ft. 2 in. at the bottom. The inside width of the car body at the top is 9 ft. 1½ in. and 8 ft. 3½ in. at the bottom.

The inside depth is 2 feet 9 inch. The car has a width overall of 10 ft 4 in. measured from the outside of the door arms. The underframe has a center sill of fishbelly construction. The draft gear is the Miner A-2-X type. It is equipped with A.R.A. Type D couplers with 6-in. by 8-in. shanks. The trucks have U-section integral box type side frames The wheels are provided with 5½-in. by 10 in. journals, and A.R.A. standards are followed in the construction of the car as far as its special purpose will permit.

Santa Fe Final Valuation Report

WASHINGTON, D. C.

THE Interstate Commerce Commission made public on August 8 its final valuation report on the Atchison, Topeka & Santa Fe Railway and leased and affiliated lines, as of June 30, 1916, finding a final value for rate-making purposes of all properties used by the Santa Fe system for common-carrier purposes to be $579,057,598. The commission's tentative valuation of the common-carrier property used by the system was $566,296,084 and the carrier contended that the value of such used properties should be $750,000,000 The commission's valuation report embraces the various roads of the Atchison, Topeka & Santa Fe Railway Company and leased and affiliated lines comprising, with a few minor exceptions, all the roads that constitute the so-called Santa Fe system.

Outstanding Capital

The commission's report finds that the final value for rate-making purposes of the property of the parent company owned and used for common-carrier purposes, as of valuation date, is $397,360,000; property used but not owned $88,986,917; total owned $400,990,818; and total used $486,346,917. The outstanding capitalization of the Atchison, Topeka & Santa Fe Railway Company as of valuation date was $634,924,553 and the investment in road and equipment, as stated in its books, was $534,221,828. With readjustments required by the accounting examination, the report says, this amount would be reduced to $500,268,146.

Cost of reproduction new of the parent company's property, exclusive of lands, was placed at $390,098,859 for the property owned and used, as of valuation date, and cost of reproduction, less depreciation, at $314,-008,244. The cost of reproduction new of the property owned by the carrier was placed at $395,749,317 and cost of reproduction less depreciation at $317,265,542. Cost of reproduction new of the used property was placed $488,672,880 and cost of reproduction less depreciation at $394,463,771. The present value of carrier lands owned was placed at $46,964,653 and that of carrier lands used at $51,869,513.

Investments

The investments of the Santa Fe in other companies, classified as being held for non-carrier purposes, amounted on date of valuation, to $281,514,456 par value and $168,633,105 book value. The carrier also owned on date of valuation securities of a par value of $41,417,-639, received with other property in the reorganization of 1895, but for which values were not then separately stated, although book values of $30,124,986 were assigned subsequent to date of valuation. The company held cash on hand and materials and supplies in the recorded amount of $55,529,535, of which $12,360,000 is classified as necessary for use as working capital and included in the final value. The remainedr, $43,169,535 is owned and held by the Santa Fe for non-carrier purposes.

The commission's report placed the following values,

as of June 30, 1916, on the common-carrier properties of other carriers embraced in the Santa Fe system:

Road	Owned and used	Owned but not used	Used but not owned
California, Arizona & Santa Fe	.....	$26,270,702	.....
Dodge City & Cimarron Valley	.....	1,690,000	.....
Garden City, Gulf & Northern	.....	383,000	.....
Laton & Weston	.....	245,000	.....
Minkler Southern	.....	1,150,000	.....
Oil Fields & Santa Fe	.....	660,000	.....
Rocky Mountain & Santa Fe	.....	2,080,000	.....
Verde Valley	.....	1,350,000	.....
Western Arizona	.....	215,000	.....
Oklahoma Central	.....	2,885,000	.....
Gulf, Colorado & Santa Fe	$55,950,000	987,816	$15,247,070
Cane Belt	.....	1,420,000	.....
Concho, San Saba & Llano	.....	901,500	.....
Gulf, Beaumont & Great Northern	.....	1,665,000	.....
Gulf, Beaumont & Kansas City	.....	1,510,000	.....
Gulf & Interstate (of Texas)	.....	862,000	.....
Jasper & Eastern	.....	1,840,000	.....
Texas & Gulf	.....	1,720,000	.....
Port Bolivar Iron Ore	.....	702,500	.....
Panhandle & Santa Fe	6,275,000	.....	14,085,111
Pecos River	.....	470,000	.....
Pecos & Northern Texas	.....	17,307,518	.....
Grand Canyon	1,056,000	.....	97,500

The roads comprising the Santa Fe system which are given a final valuation in the commission's report amount, as of valuation date, to 11,182 miles of first main track and 15,998 miles of all tracks. The parent company wholly owns and uses 7,142 miles of road. It also uses 1,386 miles of road owned by other companies.

Working Capital Discussed

The item of working capital is discussed at considerable length in the commission's report, which determines the cash working capital of the Santa Fe, as of valuation date, to be $310,500. In a separate opinion, concurring in part with the report of the majority, Commissioner Hall states:

"I find it difficult to accept the conclusion that such a system as the Santa Fe was or could be operated on valuation date with a cash working capital not exceeding $310,000." Commissioner Aitchison joined Commissioner Hall in this expression.

Majority Report Statement

The majority report states:

It must be assumed that the $310,500 represents all of the cash used in the Santa Fe's conduct of common-carrier service operations. The amount recognized as used is over $5,660,000, made up as follows:

Average amount provided by collections in advance of maturing payments, adjusted to date of valuation	$4,000,000
Operating reserve	1,350,367
Invested cash working capital	310,500
Total	$5,660,867

But, as has already been shown, the first amount is provided by the service operations themselves, without drawing on any of the net earnings, and the second amount is provided by uniform reservations of current revenue, through charges to operating expenses, to create this reserve, in advance of need, to meet irregular operating expenditures. The only investment, therefore, required to supply all the cash used either from capital or profit retained in the business, is the third item of $310,500.

Commissioner Eastman dissented from the majority report "because the final value arrived at is materially in excess of the amount of the honest and prudent investment in the property existing on valuation date."

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Bulletin No. 13, Railway and Locomotive Historical Society. A facsimile reprint of the rare and valuable "Report upon the Locomotive Engines, and the Police and Management of Several of the Principal Railroads in the Northern and Middle States," by J. Knight, Chief Engineer, and Benj. H. Latrobe, Eng'r of Location and Construction [Baltimore & Ohio Railroad]. Dated May 14, 1838, when the Long Island [p. 3-5] was 27 miles long, the Boston and Providence's locomotives burned 1⅛ cords of wood in a 41-mile trip [p. 8], the Philadelphia & Columbia was experimenting with coal as fuel [p. 28], while the operating rules on p. 35-43 are delightfully quaint to our present-day minds. 43 p. Pub. by the Society, Boston, Mass., $1.00.

Our Runaway Rivers. What can be done to put them to work. The many photographs of modern river transport equipment, terminals, rail connections, etc., are useful for reference. 48 p. Pub. by Jones & Laughlin Steel Corporation, Pittsburgh, Pa. Apply.

Your Money's Worth, by Stuart Chase and F. J. Schlink. A consideration of what consumers do and do not get for their dollars. The chapters on standardization and the value of testing departments in industry and the government departments on pages 169-237 are of special interest. 285 p. Pub. by The Macmillan Co., New York City, $2.00.

Cost of Freight Transport by Railway, by Frederick William Rogerson. "The object of this book is to examine the elements of railway operating expenses and to describe methods of procedure in the development of a cost accounting system, particularly in respect to the determination and application of overhead charges." Relates, of course, to British railways. 39 p. Pub. by the Author, Liverpool, England.

Periodical Articles

Apprentice Training on the Baltimore & Ohio, by C. N. Fullerton. Purposes, facilities and methods described. American Federationist, August, 1927, p. 937-945.

Licensed Aircraft, compiled by Aeronautics Branch, Dept. of Commerce. Everybody knows the *N-X*211, which is of course in this list, and some of us may want to identify other aircraft with the help of this list. Domestic Air News, No. 8, July 15, 1927, p. 15-19.

Transcontinental Route from Buenos Aires to Mollendo. Description of travel facilities and scenery on the latest Trans-Andean railway route to be open to traffic. Illustrated. Bulletin of the Pan American Union, August, 1927, p. 798-806.

Transport in England: A Brief Historical Survey, by C. Grant Robertson. A remarkably successful accomplishment of the author's stated purpose, "to set the problems of transport in a wider and historical context and to indicate the connection between the problems of transport today and the problems and results of the past." An appendix, p. 458, gives rates of speed and costs of transport at various pre-railway times from the Tudor period to the 19th century, while the discussion, p. 459-466, contributes additional high lights of transport history. Journal of the Institute of Transport, July, 1927, p. 454-459.

Impending Changes in Our Use of Fuels, by Arthur D. Little. Engineers and Engineering, July, 1927. p. 153-158.

The Ohio Valley Water Company Case and the Valuation of Railroads, by John G. Buchanan. Discussion of valuation of public utilities and railroads. Harvard Law Review, June, 1927. p. 1133-1176.

Shipping Locomotives on the S.S. Manchurian Prince and M. S. Beljeanne, by Henriques Crawford. Baldwin Locomotives, July, 1927. p. 26-35.

Looking Backward

Fifty Years Ago

The Pennsylvania has passed the quarterly dividend which ordinarily would have been due in August because of the necessity of making large expenditures to replace property destroyed by strikers in the Pittsburgh riots.—*Railroad Gazette,* August 10, 1877.

The formation of railway clubs in our large cities on some such plans as those in existence in Vienna and Berlin would be a good idea. They should be designed not merely for social intercourse and convenience, but also for technical and scientific discussion.—*Chicago Railway Review,* August 11, 1877.

The most ridiculous feature of the recent strike was the blatant talk of many shippers that they were willing to pay higher rates for transportation and would find no fault if rates were raised in order that the railways might pay better wages to their employees. The echoes of the strike had not died away before it was announced that a combined effort was on foot among New York merchants to break up the compact of the trunk lines for the maintenance of rates.—*Chicago Railway Review,* August 11, 1877.

Twenty-Five Years Ago

To take the place of lines put out of service by its withdrawal from the Pennsylvania system, the Western Union Telegraph Company is stringing 16 copper wires along the right-of-way of the Western Maryland to connect the large cities. From the Western Maryland the wires will be placed on public highways to reach points that have previously been reached through the Pennsylvania.—*Railway and Engineering Review,* August 16, 1902.

A conference between James J. Hill, president of the Great Northern, and his associates with farmers and fruit growers of the Columbia basin resulted in a 10 per cent reduction in rates on grain to the Pacific seaboard, which went into effect on August 15. C. S. Mellen, president of the Northern Pacific, expresses a fear that the farmers will get little of the sum represented by the reduction and that it will disappear into the pockets of the commission men and speculators.—*Railway and Engineering Review,* August 16, 1902.

Ten Years Ago

The Gulf Coast Lines have granted bonuses, amounting to about 10 per cent, to employees not connected with labor unions, and who have not been recognized by previous collective bargaining wage agreements. The bonus will be paid quarterly beginning with October 1.—*Railway Age Gazette,* August 10, 1917.

With only 1.8 per cent more cars, railroads operating 173,105 miles of line handled 16.1 per cent more freight in May, 1917, than in May, 1916, according to a statement issued by Fairfax Harrison, chairman of the Railroads' War Board.—*Railway Age Gazette,* August 15, 1917.

Western railroads are urging the traveling public, as a war measure, to use the upper berths in sleeping cars, so that it will not be necessary to haul two half-loaded cars instead of one filled to capacity. New ladder steps and individual curtains developed by the Pullman Company are designed to make the upper berth more attractive.—*Railway Review,* August 11, 1917.

The Rogers Pass route over the Selkirk Mountains in British Columbia, which has been occupied by the Canadian Pacific since 1886, has been turned over to the parks commission of the Canadian Government to be used as a tourist highway. The abandonment of this line followed the completion of the Connaught tunnel which brought about a reduction in elevation of more than 500 ft.—*Railway Review,* August 11, 1917.

Odds and Ends

Colonel Charles A. Lindbergh continues to be honored in the field of transportation. This time it is the Chicago, Milwaukee & St. Paul, which has christened one of its finest parlor cars the "Lindbergh."

A Justice of the Peace, located in Pennsylvania, has asked the editor to answer the following question: "Why does a locomotive have to 'puff'? Supposing the smokestack was sealed up and the engine started, what would happen? Would it go? If not, why not?" Evidently automobile traffic through "his honor's" locality is slack.

Rhythm and Negro Track Workers

"Instinctively the negro sings as he works, and every section foreman knows that the singing negro is a good worker," says the G. M. & N. News. "For the negro, harmony is closely knit with everything he does. He works, he prays and he plays to music.

"Just now we are concerned with his work songs. The boys are lining track on the J. & E. The little darkey whose muscles are in no way equal to his voice or his sense of rhythm, leads them.

"'Oh, he can't read,' he sings, and tap, tap, tap go the crow-bars against the rail.

"'He can't write. (Tap, tap, tap.)
How's he gonna tell,
When the tracks' all right,
Early in the morning.'

"And at the stressed syllable of 'early' over goes the track as the men push their whole weight against it. Work of this sort depends on rhythm, and everyone must move together if the track is to move. The valuable part played by the little darkey with the voice is easily apparent.

"But suppose the track is almost lined. It needs, say, a fraction of an inch to the right. 'Lightly,' says the foreman.

"'Cap'n says lightly,' sings the voice, and two light taps, guided by the tone, rather than the words, bring the rails to the exact degree.

"To this song, with its refrain of 'Early in the morning' are hundreds of verses. There is enough of the bard in every negro to add or change verses, and there is enough of the musician in him to weave simple, native tunes to his work songs."

First Transcontinental Railway

With various railway anniversaries, centennials and what not being observed this year, it seems only fitting to reproduce Bret Harte's delightful but little known verses, written to celebrate the completion of the first transcontinental railroad:

What was it the engines said,
Pilots touching, head to head
Facing on the single track,
Half a world behind each back?

Said the engine from the East:
"They who work best talk the least,
S'pose you whistle down your brakes;
What you've done is no great shakes."

Said the western engine, "Phew!"
And a long, low whistle blew.
"Come now, really that's the oddest
Talk for one so very modest.
You brag of your East, you do?
Why, I bring the East to you!
All the Orient, all Cathay,
Find through me the shortest way
And the sun you follow here
Rises in my hemisphere."

NEWS *of the* WEEK

A Squadron of Electric Locomotives on the New Haven

ALBERT F. COYLE, for several years acting editor of the Brotherhood of Locomotive Engineers' Journal, has resigned from that position, according to an announcement by Alvanley Johnston, grand chief of the brotherhood. No successor has been announced. Mr. Coyle is at present in Russia as a member of a fact finding committee.

THE AMERICAN RAILWAY EXPRESS COMPANY has completed arrangements with four air transport companies whereby 75 airplanes are to be used to carry express shipments. The service will link New York, Chicago and Dallas, Texas; and probably New York and Boston; Chicago and San Francisco; and Salt Lake City and Los Angeles.

Golden Spikes Driven at Jackson

Two golden spikes were driven in the track in front of the station of the New Orleans Great Northern and the Gulf, Mobile & Northern at Jackson, Miss., on August 5 to celebrate the completion of the branch of the latter road into Jackson, and the establishment of a new through freight route between Paducah, Ky., on the Ohio river, and New Orleans, La. I. B. Tigrett, president of the G. M. & N., F. H. Goodyear, vice-president of the N. O. G. N., and W. A. Scott, mayor of Jackson, were the chief participants in the ceremonies.

Investigate Train Control Contracts

The Department of Justice has undertaken an investigation of contracts providing for the reciprocal use of automatic train control patents for the purpose of discovering whether any such arrangements operate in contravention of the anti-trust laws. It was stated at the department that it is customary for the department to make investigations of this character with respect to cross-licensing agreements in all industries under which the holder of patents party to such an agreement assures to the other party the right to use improvements developed in the patented devices. The Interstate Commerce Commission will take no part in the investigation as it is concerned only with the operating features of automatic train control devices.

Western Firemen's Demands to be Arbitrated

The demands of the Brotherhood of Locomotive Firemen and Enginemen for increases in wages for 50,000 firemen and hostlers on railroads west of Chicago, will be submitted to arbitration. Representatives of the brotherhood and a committee of managers of the western railroads met at Chicago on July 7 to discuss the demands which, if granted, would total $12,000,000 a year. Several days later the United States Board of Mediation was called in, and Mediator Edwin P. Morrow participated in the conferences. The arbitration board will consist of two members selected by the carriers, two representatives of the brotherhood and two neutral members. The award will become effective August 1, 1927.

Southern Has 1,898 Miles of Automatic Train Control

The Southern Railway Company now has automatic train control in service on 1,898 miles of road (2,572 miles of track), the last section of the line from Cincinnati southward to New Orleans, 835 miles, having been put in operation on August 4. Work is now in progress on about 800 miles of line additional, and when all the work now contracted for is finished, the Southern will have 2,687 miles of road (3,376 miles of track) equipped with this safeguard. The different sections on which work has been completed and on which construction is now going on, are shown in the accompanying table.

Grade Crossings in Ohio

The highway department of the State of Ohio expects next year (1928) to accomplish the elimination of 40 dangerous highway crossings (a much larger number than has been possible in years past) in consequence of a new law, the Sullivan gasoline tax law, which is expected to provide $1,000,000 a year for use by the state treasury as the state's contribution to the cost of improvements to this class. Railroads are required to pay 50 per cent of such costs and the county 25 per cent; and, on the estimate of $1,000,000 annually for the additional 25 per cent to be borne by the state, it is calculated that $4,000,000 should be spent in 1928; and this is the basis of the director's estimate that 40 crossings will be eliminated.

(*Continued on page* 314)

Automatic Train Stops on Southern Railway System, July 25, 1927

	Miles in Service		Under Construction		Locomotives
	Road	Track	Road	Track	
Spencer, N. C.–Howell, Georgia	304.0	608.0	....	....	101
Salisbury, N. C.–Asheville, N. C.	140.7	147.2	....	....	70
Asheville, N. C.–Morristown, Tenn.	88.0	93.0	....	....	59
Biltmore, N. C.–Hayne, N. C.	....	....	66.0	69.0	22
Charlotte, N. C.–Columbia, S. C.	....	....	109.0	109.0	25
Bristol, Tenn.–Morristown, N. C.	....	....	89.0	89.0	21
Morristown, N. C.–Knoxville, Tenn.	42.0	84.0	....	....	
Knoxville, Tenn.–Ooltewah, Tenn.	....	....	96.0	98.0	20
Cincinnati, Ohio–Chattanooga, Tenn.	333.0	497.0	....	....	193
Chattanooga, Tenn.–Atlanta, Ga.	149.0	179.0	....	....	40
Atlanta, Ga.–Macon, Ga.	86.0	91.0	....	....	
Macon, Ga.–Jacksonville, Fla.	260.8	266.8	....	....	53
Chattanooga, Tenn.–Memphis, Tenn.	....	....	275.0	282.0	58
Selma–Rocky Mt. (A.C.L. Ry. 40.6 mi.)	....	....	....	....	8
Chattanooga, Tenn.–Meridian, Miss.	296.0	393.0	....	....	70
Newton, N. C.–Hickory, N. C. (Carolina & N.W. engs. 9.4 mi.)	....	....	....	....	11
Meridian, Miss.–New Orleans, La.	193.7	208.0	....	....	40
Slidell, La.–New Orleans, La. (N.O.–G.N. engs. 34.6 mi.)	....	....	....	....	10
Lot, Ky.–Holton, Ky.	4.6	4.6	....	....	4
Austell, Ga.–Birmingham, Ala. (150.2 mi.)	....	....	148.4	157.4	75
	1897.8	2571.6	783.4	804.4	880
TOTALS	783.4	804.4			
Total when all is completed	2687.2	3376.0			

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1927

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Akron, Canton & Youngstown	June	171	$267,229	$335	$278,026	$46,873	$32,911	$11,206	$73,665	$15,587	$180,242	64.8	$97,784	$86,634	$52,216	$19,682
	6 mos.	171	1,549,391	1,922	1,614,408	238,772	198,582	67,524	465,448	92,056	1,062,209	65.8	552,199	439,010	246,530	169,121
Atchison, Topeka & Santa Fe	June	9,422	11,243,251	3,670,324	16,235,943	3,437,429	3,230,883	414,735	4,879,744	412,310	12,290,221	75.7	3,945,722	2,621,482	2,681,493	3,503,655
	6 mos.	9,406	69,182,925	19,860,721	96,955,088	16,676,821	19,624,268	2,502,163	30,158,046	2,415,663	71,070,617	73.3	25,884,471	18,078,781	18,073,909	16,866,190
Gulf, Colorado & Santa Fe	June	1,944	2,249,276	225,408	2,602,889	604,652	614,618	54,950	850,303	73,027	2,178,481	83.7	424,408	340,990	171,655	168,859
	6 mos.	1,944	14,883,675	1,368,275	17,047,000	3,429,874	3,683,261	329,812	5,894,304	420,886	13,731,995	80.6	3,315,005	2,809,185	1,713,053	523,471
Panhandle & Santa Fe	June	954	904,956	140,579	1,115,723	270,692	264,334	12,484	377,808	27,309	917,850	82.3	197,873	174,677	71,944	189,355
	6 mos.	954	6,452,742	829,047	7,766,321	1,377,287	1,679,503	71,581	2,803,842	164,337	5,960,354	76.7	1,805,967	1,596,045	883,829	1,618,415
Atlanta & West Point	June	93	162,572	54,371	245,373	29,813	47,559	11,385	98,812	13,713	205,801	83.9	39,572	27,805	14,635	31,603
	6 mos.	93	993,347	360,442	1,538,652	182,602	271,027	70,075	579,847	84,807	1,217,281	79.1	321,371	227,602	141,683	172,922
Western of Alabama	June	133	153,257	48,078	226,226	33,416	52,848	12,359	79,713	13,396	195,530	86.4	30,696	16,771	19,363	32,536
	6 mos.	133	1,039,938	335,961	1,525,518	227,079	322,322	73,781	490,483	80,213	1,219,275	79.9	306,243	220,400	228,048	348,954
Atlanta, Birmingham & Coast	June	639	339,621	36,488	415,539	102,657	85,043	28,582	167,034	18,622	414,323	99.7	1,216	—13,001	—27,440	—13,927
	6 mos.	639	2,191,869	194,617	2,626,980	646,881	510,501	170,557	1,034,024	110,529	2,540,437	96.7	86,543	593	—86,303	73,003
Atlantic Coast Line	June	5,080	4,521,675	1,000,376	6,037,981	1,131,608	1,410,378	175,438	2,386,952	178,282	5,318,828	88.1	719,153	312,215	270,218	1,088,806
	6 mos.	5,059	32,824,144	9,100,113	45,381,248	6,510,779	8,583,715	970,468	15,849,635	1,081,140	33,346,814	73.5	12,034,434	8,857,764	8,438,866	11,978,758
Charleston & Western Carolina	June	342	242,182	13,466	265,281	46,121	42,530	7,212	100,804	8,473	205,140	77.3	60,141	40,102	37,762	67,196
	6 mos.	342	1,721,281	98,041	1,890,347	443,193	261,321	42,817	692,100	40,288	1,479,713	78.3	410,634	282,640	247,120	371,231
Baltimore & Ohio	June	5,642	17,703,957	2,425,232	21,512,679	2,330,818	4,370,070	506,516	7,131,875	681,789	15,215,981	70.7	6,296,698	5,503,616	5,249,592	5,269,041
	6 mos.	5,374	101,020,767	12,543,999	121,213,530	14,452,531	26,289,721	2,781,966	42,931,017	3,795,078	91,347,341	75.4	29,866,189	23,828,419	22,650,815	20,838,512
Baltimore & Ohio Chicago Term.	June	75	.....	.....	346,191	42,084	39,036	2,309	164,356	18,787	271,260	78.4	74,931	19,276	83,578	124,700
	6 mos.	75	.....	.....	1,922,126	240,401	244,325	13,777	990,347	97,014	1,616,339	84.1	305,787	—6,704	528,996	611,493
Staten Island Rapid Transit	June	23	121,516	135,713	295,451	43,712	23,073	1,804	111,045	15,817	195,451	66.2	100,000	83,948	43,731	3,466
	6 mos.	23	638,738	717,398	1,537,987	244,748	128,331	12,151	656,899	91,848	1,133,867	73.7	404,120	282,969	55,256	—39,783
Bangor & Aroostook	June	613	330,456	38,137	393,136	103,973	114,879	6,634	117,904	23,712	371,072	94.4	22,064	—4,944	24,426	108,368
	6 mos.	614	3,693,197	402,430	4,253,123	647,029	726,710	34,843	1,038,564	144,039	2,610,443	61.4	1,642,680	1,294,413	1,372,977	1,069,788
Belt Ry. Co. of Chicago	June	32	.....	.....	620,220	69,854	77,656	3,884	265,072	10,023	426,489	68.8	193,731	144,853	146,614	171,673
	6 mos.	32	.....	.....	3,614,358	289,618	382,230	21,716	1,626,928	59,081	2,379,573	65.8	1,234,785	948,319	843,184	999,277
Bessemer & Lake Erie	June	227	1,453,884	10,348	1,485,364	160,038	341,719	16,853	358,532	48,807	921,375	62.0	563,989	444,741	441,386	959,615
	6 mos.	227	6,110,621	71,900	6,309,341	659,636	1,918,142	89,401	1,899,862	214,377	4,674,655	74.1	1,634,686	1,296,880	1,521,672	1,861,967
Bingham & Garfield	June	33	43,605	.....	44,648	7,180	9,173	1,303	9,453	4,845	32,019	71.7	12,629	4,728	20,628	25,263
	6 mos.	33	250,731	.....	258,088	46,009	53,163	8,658	61,454	30,333	200,317	77.6	57,771	11,454	111,304	112,483
Boston & Maine	June	2,112	4,255,771	1,387,219	6,429,771	1,033,451	1,146,268	88,139	2,393,827	216,868	4,893,563	76.1	1,536,208	1,240,015	1,016,945	1,212,703
	6 mos.	2,111	24,690,065	8,853,168	37,966,878	4,705,421	7,624,973	474,533	15,037,717	1,321,203	29,249,892	77.0	8,716,986	6,932,404	5,521,532	6,215,452
Brooklyn Eastern Dist. Terminal	June	9	123,827	.....	131,083	13,971	11,583	420	47,589	6,580	80,143	61.1	50,940	43,829	43,829	46,540
	6 mos	9	703,726	.....	741,361	59,168	79,272	4,490	277,944	37,747	458,621	61.9	282,740	239,717	239,717	258,749
Buffalo & Susquehanna	June	253	120,184	1,291	127,185	29,415	48,822	1,586	39,118	7,993	126,934	99.8	251	—1,849	16,142	—978
	6 mos.	253	752,904	12,042	796,735	169,310	308,567	10,254	265,982	48,713	802,826	100.8	—6,091	—18,691	88,256	—19,665
Buffalo, Rochester & Pitsburgh	June	601	1,247,168	82,549	1,383,781	199,478	464,372	30,252	532,758	49,119	1,278,460	92.4	105,321	55,282	67,178	223,451
	6 mos.	601	7,971,613	540,290	8,813,704	907,339	2,908,488	178,680	3,402,182	273,747	7,684,868	87.2	1,128,836	828,443	947,943	1,519,455
Canadian Pacific Lines in Maine	June	233	97,005	27,689	138,464	79,650	30,318	5,960	64,757	3,707	184,392	133.2	—45,928	—59,228	—84,690	—93,669
	6 mos.	233	1,249,540	196,788	1,523,105	345,621	306,568	33,691	666,777	22,730	1,375,387	90.3	147,718	67,918	—55,935	—8,735
Canadian Pacific Lines in Vermont	June	85	101,515	34,083	159,196	26,522	27,786	2,346	89,011	3,446	149,111	93.7	10,085	5,335	4,886	—7,132
	6 mos.	85	677,853	188,378	999,470	175,251	192,189	13,288	615,032	16,196	1,011,956	101.2	—12,486	—40,986	—43,680	.....
Central of Georgia	June	1,911	1,638,570	357,558	2,181,468	298,164	428,164	80,678	877,469	99,785	1,799,326	82.5	382,142	267,092	262,734	403,564
	6 mos.	1,911	10,368,585	2,316,543	13,940,550	1,747,972	2,538,137	465,879	5,297,687	626,407	10,741,257	77.1	3,199,293	2,470,572	2,348,799	2,491,364
Central New Jersey	June	690	4,241,737	764,052	5,309,803	530,350	1,053,572	50,641	2,004,477	116,059	3,782,072	71.2	1,527,731	1,058,335	959,324	1,057,533
	6 mos.	690	22,864,539	4,140,457	28,837,507	2,915,869	6,342,970	270,827	11,716,385	723,963	22,117,084	76.7	6,720,424	5,010,915	4,270,599	3,981,052
Central Vermont	June	433	626,325	116,936	823,034	196,492	104,890	23,157	308,152	24,148	658,636	80.03	164,398	144,818	118,957	26,319
	6 mos.	433	3,305,895	607,198	4,328,370	871,554	675,505	116,699	1,911,558	144,448	3,724,372	86.05	603,998	487,710	376,750	419,433
Chesapeake & Ohio	June	2,650	9,994,267	754,286	11,185,632	1,676,245	2,587,422	135,098	2,896,411	320,928	7,649,140	68.4	3,536,492	2,823,408	3,013,021	3,467,471
	6 mos.	2,650	60,014,258	4,302,345	66,979,297	9,934,352	15,476,926	767,342	17,752,912	1,680,747	45,800,870	68.4	21,178,427	16,911,699	17,868,252	15,748,302
Chicago & Alton	June	1,029	1,497,590	546,529	2,259,100	335,382	395,150	83,535	819,597	56,966	1,703,717	75.4	555,383	449,605	269,514	356,056
	6 mos.	1,045	9,484,348	3,116,595	13,887,851	1,655,419	2,914,633	467,743	5,350,559	392,763	10,861,781	78.2	3,026,070	2,390,116	1,323,348	1,360,970
Chicago & Eastern Illinois	June	945	1,543,707	346,792	2,047,696	277,184	397,641	84,753	809,349	69,985	1,642,536	80.2	405,160	289,806	134,461	—13,396
	6 mos.	945	10,348,762	2,011,604	13,360,547	1,555,204	3,058,599	497,772	5,305,195	420,507	10,893,012	81.5	2,467,535	1,774,266	969,294	289,434
Chicago & Illinois Midland	June	133	47,416	6,208	57,356	52,183	56,164	9,460	38,508	14,094	170,409	297.1	—113,053	—119,950	—134,235	33,761
	6 mos.	133	805,963	59,545	893,131	233,792	312,210	48,119	330,681	77,878	1,002,680	112.3	—109,549	—152,288	—199,506	236,740
Chicago & North Western	June	8,463	9,681,661	2,473,780	13,580,533	2,016,637	2,406,464	222,118	4,663,767	357,249	9,717,734	71.6	3,862,799	3,061,252	2,853,191	3,098,190
	6 mos.	8,463	50,471,809	12,399,138	70,527,721	9,900,178	14,613,273	1,240,503	27,836,902	2,108,118	56,016,292	79.4	14,511,429	9,695,834	8,432,843	9,801,361

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Chicago, Burlington & Quincy	June	9,391	$8,690,783	$1,980,723	$11,960,342	$2,259,373	$2,016,946	$327,151	$4,060,579	$368,558	$9,120,154	76.3	$2,840,188	$1,930,375	$1,596,770	$2,214,665
	6 mos.	9,391	53,624,468	10,352,296	71,603,911	9,817,758	12,308,805	1,623,875	25,900,716	2,181,174	52,204,051	72.9	19,399,860	13,663,508	11,772,681	11,979,906
Chicago Great Western	June	1,496	1,615,070	255,316	2,031,393	364,417	398,964	78,806	792,355	56,941	1,703,371	83.9	328,022	248,681	103,638	210,331
	6 mos.	1,496	9,046,609	1,580,928	11,571,216	1,559,788	2,328,459	466,999	4,850,583	342,129	9,614,962	83.1	1,956,254	1,459,326	623,124	814,577
Chicago, Indianapolis & Louisville	June	650	1,126,082	208,181	1,490,007	157,060	295,877	38,473	541,838	33,720	1,081,323	72.6	408,684	326,451	235,665	240,502
	6 mos.	650	6,926,813	1,279,211	9,106,601	862,606	1,957,273	233,652	3,390,395	221,306	6,747,749	74.1	2,358,852	1,919,171	1,312,083	1,251,015
Chicago, Milwaukee & St. Paul	June	11,205	10,192,614	1,775,412	13,320,143	3,114,222	2,851,719	333,070	4,795,103	368,001	11,547,412	86.7	1,772,731	1,019,882	562,523	1,680,823
	6 mos.	11,203	58,243,458	8,919,190	74,636,449	12,284,514	17,837,878	1,842,073	29,150,905	2,284,557	63,783,770	85.5	10,852,679	6,334,419	3,808,103	6,171,467
Chicago River & Indiana	June	19	.....	.....	557,160	62,655	82,041	750	210,544	13,560	369,550	66.3	187,610	146,213	264,306	259,012
	6 mos.	19	.....	.....	3,360,986	343,573	473,382	5,137	1,321,522	99,521	2,243,135	66.7	1,117,851	875,344	1,560,673	1,524,111
Chicago, Rock Island & Pacific	June	7,573	8,217,395	1,881,566	11,060,034	1,571,892	2,381,280	230,138	3,952,936	312,232	8,436,967	76.3	2,623,067	1,989,572	1,511,760	2,087,305
	6 mos.	7,563	48,158,551	10,930,848	64,596,044	8,678,827	13,769,055	1,361,295	24,523,710	1,911,091	50,300,327	77.9	14,295,717	10,471,865	7,835,291	5,527,409
Chicago, Rock Island & Gulf	June	458	433,679	100,809	570,524	117,335	108,040	22,228	208,214	17,977	474,714	83.2	95,810	69,192	31,153	171,498
	6 mos.	458	2,931,502	495,208	3,694,729	544,227	489,689	122,211	1,351,431	104,445	2,559,310	69.3	1,135,419	976,510	785,607	430,626
Chic., St. Paul, Minn. & Omaha	June	1,746	1,623,355	401,307	2,199,433	284,820	371,970	38,262	863,217	73,308	1,642,207	74.7	557,226	444,708	351,097	244,797
	6 mos.	1,746	9,087,127	23,203,336	12,394,065	1,573,353	2,418,119	208,318	5,412,307	459,118	10,125,648	81.7	2,268,417	1,636,932	1,186,461	1,088,322
Clinchfield Railroad	June	309	590,418	23,119	626,529	70,223	177,640	23,133	129,745	19,017	419,310	66.9	207,219	132,216	256,869	232,532
	6 mos.	309	3,852,008	147,084	4,075,904	444,326	1,048,481	138,994	852,612	115,541	2,598,042	63.7	1,477,862	1,027,835	1,731,342	1,635,270
Colorado & Southern	June	1,054	750,645	109,513	951,883	282,643	240,222	18,000	345,559	43,385	938,666	98.6	13,217	—50,328	—51,152	121,919
	6 mos.	1,054	4,873,069	628,120	6,032,966	1,283,851	1,481,368	94,963	2,166,234	264,402	5,333,982	88.4	698,984	317,238	296,111	638,516
Ft. Worth & Denver City	June	491	623,701	194,317	886,265	248,574	183,970	23,327	271,090	41,637	765,203	86.3	121,062	94,285	75,029	225,505
	6 mos.	491	4,484,573	1,254,152	6,199,247	1,254,131	1,076,476	113,170	1,895,964	240,300	4,574,948	73.8	1,624,299	1,228,725	1,163,560	1,439,765
Wichita Valley	June	271	68,290	14,472	90,454	40,583	7,949	2	36,728	1,954	87,131	96.3	3,323	—3,918	—22,600	8,737
	6 mos.	271	754,593	99,696	900,019	154,922	60,692	120	270,937	12,299	498,005	55.3	402,014	346,070	223,238	124,595
Columbus & Greenville	June	167	91,570	16,099	113,832	46,234	16,946	3,383	44,767	10,338	121,668	106.9	—7,836	—9,036	—29,343	10,437
	6 mos.	167	687,420	127,476	848,992	245,126	115,418	21,026	307,794	74,322	763,686	90.0	85,306	78,570	—18,833	38,161
Conemaugh & Black Lick	June	23	89,506	.....	143,539	29,558	27,827	1,542	80,302	2,924	142,153	99.0	1,386	186	3,395	8,207
	6 mos.	23	448,543	.....	831,306	114,869	198,180	6,324	538,695	18,534	876,602	105.4	—45,296	—52,496	—50,364	—21,375
Delaware & Hudson	June	881	3,092,600	249,986	3,580,437	482,374	1,027,546	51,252	1,236,510	142,416	2,956,559	82.6	623,878	506,756	501,205	1,258,427
	6 mos.	881	17,994,321	1,516,139	20,885,395	2,691,512	5,879,107	309,709	7,716,370	851,892	17,559,664	84.1	3,325,731	2,623,254	2,429,024	3,775,068
Delaware, Lackawanna & Western	June	999	5,593,803	1,090,449	7,535,031	777,611	1,233,055	143,858	2,675,358	187,938	5,068,681	67.3	2,466,350	1,780,619	1,797,098	2,110,644
	6 mos.	999	30,731,071	6,136,313	41,738,407	4,134,373	7,639,262	810,980	16,745,056	1,084,276	30,716,230	73.6	11,022,177	7,457,586	7,545,001	7,998,569
Denver & Rio Grande Western	June	2,560	1,849,486	407,435	2,481,489	600,831	501,852	68,681	708,958	89,452	2,001,993	80.7	479,496	294,462	366,563	643,619
	6 mos.	2,542	11,752,754	1,816,747	14,659,271	3,160,316	3,021,275	346,046	4,482,278	525,144	11,693,858	79.8	2,965,413	1,853,576	2,269,286	2,972,343
Denver & Salt Lake	June	255	238,771	22,724	280,744	164,285	96,041	1,427	70,551	9,077	339,929	121.1	—59,185	—67,935	—59,740	—60,679
	6 mos.	255	1,487,220	161,806	1,758,958	544,315	670,306	9,743	415,187	52,197	1,688,056	96.0	70,902	29,328	63,125	35,594
Detroit & Mackinac	June	375	131,869	12,237	157,394	36,317	23,471	1,677	49,230	5,296	113,035	71.8	44,359	34,413	36,583	15,037
	6 mos.	375	625,378	85,690	776,461	129,373	165,546	10,853	286,557	33,088	621,799	80.1	154,662	92,716	112,767	34,921
Detroit & Toledo Shore Line	June	50	366,918	.....	371,233	73,773	33,738	3,272	80,264	7,031	198,078	53.4	173,155	143,434	78,416	82,805
	6 mos.	50	2,586,442	.....	2,617,010	320,690	204,002	21,022	626,860	41,311	1,213,885	46.4	1,403,125	1,229,180	665,212	548,585
Detroit Terminal	June	19	.....	.....	164,827	23,946	14,993	.....	79,461	3,942	122,342	74.2	42,485	29,560	38,054	25,089
	6 mos.	19	.....	.....	1,064,164	104,781	92,903	49	500,158	24,249	722,140	67.9	342,024	242,090	289,492	190,085
Detroit, Toledo & Ironton	June	495	654,393	4,494	673,993	144,379	146,387	14,366	249,788	39,924	594,843	88.3	79,150	46,433	—2,359	220,610
	6 mos.	495	4,653,629	33,372	4,769,017	721,966	942,534	83,384	1,586,421	265,848	3,599,870	75.5	1,169,147	932,130	563,733	1,293,678
Duluth & Iron Range	June	274	929,314	4,330	1,063,652	142,610	121,454	2,292	213,270	30,445	509,700	47.9	553,952	487,553	492,787	465,945
	6 mos.	274	2,329,636	37,944	2,688,467	570,673	670,213	12,425	856,406	136,393	2,245,769	83.5	442,698	167,797	176,567	62,587
Duluth, Missabe & Northern	June	306	2,416,662	5,475	2,746,216	255,388	196,317	3,694	383,382	27,509	866,244	31.5	1,879,972	1,544,886	1,538,635	1,637,882
	6 mos.	305	5,721,966	37,475	6,535,019	1,133,289	1,277,399	19,644	1,419,339	146,041	3,995,413	61.1	2,539,606	1,575,978	1,543,252	832,459
Duluth, Winnipeg & Pacific	June	178	184,079	18,225	212,306	85,360	36,965	5,085	67,938	7,489	205,661	96.9	6,645	—3,970	134	9,045
	6 mos.	178	1,113,574	97,727	1,252,704	243,865	290,789	27,471	425,872	49,465	1,045,001	83.4	207,703	145,508	161,456	146,431
Elgin, Joliet & Eastern	June	461	1,824,372	21	2,002,730	249,083	419,475	14,835	693,987	62,691	1,436,651	71.7	566,079	473,121	348,060	559,459
	6 mos.	460	11,848,221	41	12,938,363	1,243,943	2,488,605	84,747	4,408,746	293,794	8,505,353	65.7	4,433,010	3,849,972	2,939,484	2,980,829
Erie Railroad	June	2,047	7,421,085	997,468	9,185,093	1,160,227	2,206,917	148,926	3,549,774	295,390	7,411,155	80.7	1,773,938	1,416,214	1,375,627	1,774,901
	6 mos.	2,047	43,164,882	5,549,872	53,070,451	6,202,890	14,109,326	889,429	21,528,099	1,764,559	44,755,685	84.3	8,314,766	6,070,473	6,031,632	5,750,644
Chicago & Erie	June	269	894,048	59,485	1,051,543	148,225	125,396	22,907	340,360	42,743	679,533	64.6	372,010	317,215	—25,352	49,619
	6 mos.	269	5,951,035	298,963	6,814,851	808,555	865,246	142,617	2,247,560	251,879	4,315,221	63.3	2,499,630	2,170,810	148,973	433,560
New Jersey & New York	June	45	31,852	98,749	135,828	14,843	20,717	1,605	83,495	3,587	124,247	91.5	11,581	8,004	—25,230	—6,810
	6 mos.	45	177,042	566,068	774,679	101,795	126,556	9,840	456,800	25,388	720,296	93.0	54,383	32,748	—159,940	—116,434
N. Y., Susquehanna & Western	June	134	321,879	48,905	412,663	47,259	57,172	5,145	200,350	11,384	321,301	77.9	91,362	62,871	41,476	92,250
	6 mos.	134	1,897,751	290,562	2,441,774	285,591	394,687	30,381	1,270,620	73,964	2,055,148	84.2	386,626	215,354	59,528	253,459

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Evansville, Indianap's & Terre Haute	June	146	$199,023	$4,299	$209,737	$30,198	$21,509	$2,347	$61,986	$6,463	$138,021	65.8	$71,716	$64,343	$20,858	$14,966
	6 mos.	146	1,099,979	33,105	1,173,975	161,421	154,841	13,563	417,624	46,492	809,417	68.9	364,558	325,970	102,264	171,080
Florida East Coast	June	846	819,743	281,807	1,246,974	299,437	205,264	30,388	483,035	52,129	1,060,828	85.1	186,096	60,058	—59,396	350,863
	6 mos.	846	7,012,009	3,398,963	11,611,622	2,153,307	1,685,667	204,619	3,676,400	332,597	8,368,441	72.1	3,243,181	2,481,158	1,506,491	3,352,096
Fort Smith & Western	June	249	90,990	9,920	107,634	27,400	22,903	5,223	43,403	7,852	106,016	98.5	1,618	—3,882	—12,256	—5,688
	6 mos.	249	700,243	73,362	816,699	172,721	175,493	33,506	298,394	46,777	722,931	88.5	93,768	63,193	—8,545	—10,101
Galveston Wharf	June	13	.....	.....	118,440	49,704	5,515	1,995	28,046	3,872	104,589	88.3	13,851	—3,149	—3,545	—6,039
	6 mos.	13	.....	.....	982,280	276,685	29,565	10,028	203,401	23,091	626,458	63.8	355,822	253,822	253,277	7,961
Georgia R. R.	June	328	352,350	71,366	452,986	56,074	91,289	24,521	198,419	23,896	394,638	87.1	58,348	48,247	64,617	82,748
	6 mos.	328	2,218,942	412,132	2,821,029	323,812	530,845	143,948	1,227,092	140,563	2,364,200	83.8	456,829	390,583	456,060	504,298
Georgia & Florida	June	445	118,370	15,100	141,123	21,889	20,436	10,395	60,180	8,090	121,212	85.9	19,911	11,618	7,769	13,466
	6 mos.	445	792,637	92,658	931,599	165,286	128,771	59,610	347,882	48,871	751,759	80.7	179,840	132,946	111,423	97,635
Grand Trunk Western	June	347	1,484,364	218,672	1,801,297	232,985	363,463	45,608	588,001	64,140	1,296,265	72.0	505,032	420,717	242,722	366,131
	6 mos.	347	8,856,211	1,020,079	10,377,752	1,106,264	2,239,020	246,059	3,597,856	378,942	7,586,784	73.1	2,790,968	2,285,642	1,572,915	1,632,320
Atlantic & St. Lawrence	June	166	176,008	22,592	215,762	65,704	36,537	6,856	94,581	7,630	212,728	98.6	3,034	—9,916	—67,731	—34,165
	6 mos.	166	1,088,463	176,506	1,383,342	235,938	234,589	36,756	667,232	50,713	1,233,687	89.2	149,655	71,955	—326,405	—296,893
Chic., Det. & Canada Gr. Tr. Jct.	June	59	295,289	907	341,919	93,789	16,680	4,957	105,982	3,940	224,921	65.8	116,998	106,592	88,919	81,626
	6 mos.	59	1,751,524	6,625	2,004,555	255,236	107,170	26,913	619,213	27,730	1,035,772	51.7	968,783	906,543	704,618	655,618
Detroit, Grand Haven & Milw.	June	189	687,484	26,977	764,548	101,542	62,239	14,161	269,323	18,865	465,133	60.8	299,415	286,481	171,862	122,884
	6 mos.	189	3,614,555	171,220	4,073,170	395,738	361,131	76,656	1,564,797	110,616	2,504,826	61.5	1,568,844	1,490,339	870,850	722,341
Great Northern	June	8,164	7,585,593	1,129,221	9,753,656	1,784,468	1,363,934	242,391	2,945,643	227,378	6,617,832	67.8	3,135,824	2,287,957	2,316,054	2,308,518
	6 mos.	8,164	37,055,754	5,926,573	47,784,229	7,518,822	8,730,487	1,319,880	17,143,243	1,341,920	36,413,205	76.2	11,371,024	6,782,129	7,032,835	7,022,942
Green Bay & Western	June	234	111,851	5,292	121,063	34,578	16,050	4,081	50,739	2,515	107,938	89.1	13,125	5,125	—353	7,093
	6 mos.	234	709,356	41,190	787,229	142,706	121,875	26,283	303,283	16,436	610,532	77.5	176,697	128,697	112,775	144,840
Gulf & Ship Island	June	307	218,150	34,710	271,969	118,682	46,507	4,924	115,873	8,728	297,827	109.5	—25,858	—49,647	—57,635	—151,617
	6 mos.	307	1,489,446	247,571	1,880,237	738,769	330,845	34,433	760,033	51,078	1,936 944	103.0	—56,707	—199,951	—271,721	—583,071
Gulf, Mobile & Northern	June	660	487,999	27,896	538,378	96,623	86,504	33,805	167,030	31,296	415,489	77.17	122,889	89,978	65,182	89,741
	6 mos.	627	3,050,929	178,214	3,361,422	578,915	519,171	176,002	971,442	156,472	2,403,404	71.50	958,018	733,536	616,333	649,193
Hocking Valley	June	348	1,788,953	63,278	2,088,348	207,993	368,311	16,028	534,452	44,781	1,171,536	56.1	916,812	800,085	626,778	504,160
	6 mos.	348	9,041,005	393,906	10,342,700	1,093,311	2,254,638	97,689	2,931,661	262,449	6,639,512	64.2	3,703,188	3,019,410	2,557,841	2,046,637
Illinois Central	June	4,874	10,290,239	1,927,088	13,108,755	1,653,885	3,239,568	231,913	4,446,490	340,000	9,998,360	76.3	3,110,395	2,310,706	2,224,828	1,900,007
	6 mos.	4,874	59,730,222	11,769,462	77,215,770	8,678,682	17,643,206	1,586,927	27,984,962	2,091,664	58,422.766	75.7	18,793,004	13,647,564	12,991,178	12,354,463
Yazoo & Mississippi Valley	June	1,710	1,413,418	265,274	1,797,994	514,343	438,636	45,722	699,806	71,852	1,773,698	98.6	24,296	—156,440	—189,555	154,617
	6 mos.	1,710	10,053,492	1,789,559	12,645,631	2,832,432	2,396,904	292,579	4,845,828	441,428	10,834,901	85.7	1,810,730	734,793	405,535	1,181,569
Illinois Central System	June	6,584	11.711,250	2,194,985	14,916,966	2,168,228	3,683,629	277,635	5,156,988	411,914	11,788.237	79.0	3,128,729	2,143,437	2,037,093	2,063,318
	6 mos.	6,584	69,833,466	13,578,661	89,930,795	11,511,114	20,073,772	1,879,506	32,882,321	2,533,512	69,343,280	77.1	20,587,515	14,337,184	13,425,596	13,578,688
Kansas City, Mexico & Orient	June	272	223.793	8,082	241,739	61,379	56,793	7,660	95,664	8,484	229,974	95.1	11,765	7,729	2,342	2,938
	6 mos.	272	1,387,145	37,818	1,475,305	391,053	308,996	50,850	631,408	69,665	1,451.749	98.4	23,556	—1.934	50,924	19,497
Kans. City, Mex. & Orient of Tex.	June	465	629,817	19,552	666,621	193,725	91,553	9,244	183,136	10,241	487.897	73.2	178,724	171.682	61,386	1,810
	6 mos.	465	3,033,954	111,876	3,236,766	796,660	476,047	57,923	1,138,518	79,297	2,546,907	78.7	689,859	646,898	142,697	36,780
Kansas City Southern	June	784	1,321,847	117,599	1,608,857	177,169	281,552	51,285	497,253	91,933	1,098,862	68.3	509,995	399,450	349,416	308,939
	6 mos.	784	7,615,277	642,356	9,199,096	1,020,193	1,557,160	307,029	2,946,614	491,058	6,311,839	68.6	2,887,257	2,223,462	1,941,253	2,081,878
Texarkana & Ft. Smith	June	81	218,568	10,422	245,206	56,495	26,167	6,918	72,909	10,735	174.441	71.1	70,765	55,733	21,735	58,078
	6 mos.	81	1,302,676	57,219	1,463,604	222,543	138,366	38,328	431,800	62,141	899,456	61.5	564,148	474,132	284,602	422,063
Kansas, Oklahoma & Gulf	June	326	214,875	3,759	222,263	61,475	16,773	9,023	64,282	7,784	152,329	68.5	69,934	60,514	47,460	—11,298
	6 mos.	326	1,307,888	28,834	1,368,843	577,111	133,200	56,029	414,253	43,201	1,203.878	87.9	164,965	107,308	5,030	—489,130
Lake Superior & Ishpeming	June	160	234,106	1,436	270.353	43,226	24,296	548	53,018	4,773	125,861	46.6	144,492	117,906	112,529	160.007
	6 mos.	160	734,459	18,377	846,752	190,550	161,322	3,439	248,701	29,463	633,475	74.8	213,277	109,680	91,696	85,739
Lake Terminal	June	13	.....	.....	97,434	17,671	25.680	.....	55,650	1,873	100.874	103.5	—3,440	302	—1,765	17,178
	6 mos.	13	.....	.....	540,472	89,338	127.867	.....	334,658	10,952	562.815	104.1	—22,343	—47,627	—54.242	6,869
Lehigh & Hudson River	June	96	279.061	1,815	292.607	38.026	42.276	2.315	92,075	10.371	185.034	63.2	107,573	89,077	58,488	63,841
	6 mos.	96	1,577,843	11,409	1,671,287	186,927	263,795	12,234	600,214	58,266	1,121,380	67.1	549,907	450,017	307,556	316,711
Lehigh & New England	June	216	541.764	1,152	555,037	64,087	101,522	4.119	166,915	17,494	354,069	63.8	200.968	174.160	153,964	187,583
	6 mos.	216	2,787.667	7,326	2,846.520	269,318	591.209	33,725	937.153	100.976	1,926,764	67.7	919,756	785.123	756,211	627.472
Lehigh Valley	June	1,363	5,315,752	692,111	6 499,007	758,071	1.413.734	139,904	2.389.130	145.762	4 884,878	75.2	1,614,129	1.283,130	1,149,656	1,639.568
	6 mos.	1,363	30,694,260	3,606,129	37,231,274	3,908,010	8,433,835	811,469	15,474,270	898,777	29,719,768	79.8	7,511,506	5,726,295	4,587,188	5,645,090
Louisiana & Arkansas	June	302	232.395	15.185	258,547	64.366	61.828	10.234	80.880	10.924	228.009	88.2	30.538	6.363	—1.964	33,758
	6 mos.	302	1.611.381	87.879	1.779.041	356,092	379.796	67 098	557.125	69.904	1,428,839	80.3	350.202	197.042	134.165	376,822
Louisiana Ry. & Nav. Co.	June	337	111 831	8.091	133 316	73.142	27.481	14.856	74.084	10.631	199.298	149.4	—65.982	—88 024	—107.679	52.767
	6 mos.	337	1,349,583	66,962	1,511,664	368,060	223,236	75,212	718,592	59,854	1,435,111	94.9	76,553	—58,902	—231,361	—120.468

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Louisiana Ry. & Nav. Co. of Tex.	June	206	$65,293	$3,870	$72,994	$17,419	$12,239	$3,505	$34,871	$5,917	$73,951	101.3	—$957	—$4,949	—$17,256	—$21,556
	6 mos.	206	462,479	24,728	510,112	128,951	81,822	18,135	241,257	36,617	506,567	99.3	3,545	—20,505	—103,307	—92,232
Louisville & Nashville	June	5,064	9,401,368	1,668,586	11,735,466	1,989,698	2,759,896	274,428	4,081,074	359,809	9,514,698	81.1	2,220,768	1,674,725	1,632,974	2,437,035
	6 mos.	5,062	57,791,272	10,041,686	71,840,586	11,195,484	16,730,304	1,581,995	25,337,801	2,026,700	57,140,829	79.5	14,699,757	11,292,960	10,987,995	12,920,764
Louisville, Henderson & St. Louis	June	199	226,664	48,559	292,415	67,757	39,269	8,979	98,364	11,211	225,580	77.1	66,835	50,858	47,063	26,881
	6 mos.	199	1,552,806	305,622	1,962,118	356,091	289,019	46,853	639,991	70,154	1,402,108	71.5	560,010	436,587	398,295	282,263
Maine Central	June	1,121	1,132,889	304,423	1,609,101	309,955	289,034	21,433	611,152	51,211	1,285,926	79.9	323,175	209,218	194,184	319,997
	6 mos.	1,121	7,573,510	1,774,422	10,243,927	1,652,472	1,938,760	94,222	4,068,879	342,891	8,098,574	79.1	2,145,353	1,461,712	1,225,144	1,367,809
Midland Valley	June	364	285,365	26,622	322,975	70,069	38,399	7,084	87,859	16,990	219,813	68.1	103,162	86,576	65,722	104,390
	6 mos.	364	1,659,630	175,272	1,906,044	310,380	225,959	43,449	517,929	96,296	1,193,038	62.6	713,006	595,990	486,236	634,670
Minneapolis & St. Louis	June	1,627	1,094,277	78,722	1,238,171	222,460	264,805	35,783	512,182	42,939	1,077,556	87.0	160,615	99,337	54,019	—47,116
	6 mos.	1,627	5,685,939	549,615	6,603,629	1,261,735	1,633,538	211,886	3,183,736	275,349	6,559,105	99.3	44,524	—280,629	—573,885	—400,839
Minneapolis, St. Paul & S. S. Marie	June	4,396	3,159,996	483,774	4,000,511	717,077	742,477	88,800	1,348,131	120,519	3,052,729	76.3	947,782	717,615	612,799	639,995
	6 mos.	4,396	16,644,158	2,633,640	20,942,583	3,186,305	4,363,969	442,397	8,392,165	681,637	17,170,047	82.0	3,772,536	2,412,102	1,795,677	2,004,561
Duluth, South Shore & Atlantic	June	588	396,240	55,789	504,921	118,328	74,699	7,483	179,862	11,741	395,427	78.3	109,494	77,494	62,997	—10,092
	6 mos.	589	2,018,125	389,105	2,632,970	427,588	417,170	46,455	1,110,772	71,289	2,099,428	79.7	533,542	353,527	261,167	136,349
Spokane International	June	165	85,875	9,894	102,866	17,891	7,957	3,684	30,921	6,593	68,047	66.2	34,819	29,461	21,770	25,389
	6 mos.	165	491,475	59,861	588,164	97,759	49,303	21,619	195,255	39,291	409,480	69.6	178,684	146,423	101,690	144,009
Mississippi Central	June	161	106,652	8,475	120,539	16,177	26,011	8,415	39,140	7,922	97,640	81.0	22,899	16,193	20,994	24,497
	6 mos.	161	714,655	51,093	794,416	113,305	155,487	49,304	221,532	46,980	586,572	73.8	207,844	157,757	174,023	184,168
Missouri & North Arkansas	June	364	125,625	14,375	148,518	38,840	16,906	9,767	53,787	8,082	127,382	85.7	21,136	18,785	7,796	—19,161
	6 mos.	364	704,819	87,432	848,907	225,790	96,230	57,408	315,031	44,718	739,177	87.1	109,730	95,098	31,841	—127,450
Missouri-Kansas-Texas	June	1,799	2,199,135	348,169	2,743,082	526,806	641,575	65,790	706,744	94,489	2,050,394	74.7	692,688	538,011	544,941	777,827
	6 mos.	1,799	13,851,271	2,077,960	17,160,320	2,205,300	3,877,348	395,305	4,574,754	582,401	11,681,877	68.1	5,478,443	4,332,119	4,391,745	4,394,656
Missouri-Kansas-Texas of Texas	June	1,389	1,029,862	331,064	1,475,253	302,715	231,129	51,309	642,557	66,679	1,311,825	88.9	163,428	93,427	—61,338	110,337
	6 mos.	1,389	7,546,656	1,957,518	10,336,301	1,527,154	1,549,625	305,203	4,230,442	397,248	8,093,660	78.3	2,242,641	1,910,202	900,634	792,097
Missouri Pacific	June	7,358	7,590,008	1,237,163	9,667,918	1,968,066	1,984,518	288,691	3,622,079	359,836	8,282,963	85.7	1,384,955	1,006,607	684,945	1,466,796
	6 mos.	7,353	48,006,493	7,175,978	60,143,905	10,096,954	12,117,654	1,744,623	23,138,091	2,141,453	49,487,074	82.3	10,656,831	8,120,806	5,871,007	8,725,790
Gulf Coast Lines	June	999	803,735	141,759	1,017,765	228,318	225,577	38,116	356,722	62,219	913,880	89.79	103,885	44,238	5,113	284,267
	6 mos.	981	6,694,878	987,899	8,185,338	1,498,128	1,382,644	238,110	2,618,803	338,328	6,076,276	74.23	2,109,062	1,728,308	1,147,178	1,803,642
International-Great Northern	June	1,159	1,013,506	211,381	1,342,968	276,301	239,628	38,553	568,846	67,687	1,160,660	86.42	182,308	139,870	141,070	214,435
	6 mos.	1,159	6,920,937	1,196,060	8,974,750	1,556,936	1,560,399	213,808	3,803,584	374,705	7,409,540	82.56	1,565,210	1,311,177	828,875	791,159
San Antonio, Uvalde & Gulf	June	318	145,469	17,011	174,162	31,567	21,803	5,199	63,166	8,088	130,526	74.9	43,636	39,951	15,872	27,614
	6 mos.	318	834,512	127,718	1,043,512	215,659	131,522	30,845	316,896	38,105	736,989	70.6	306,523	284,601	116,225	171,393
Texas & Pacific	June	1,954	2,176,603	431,446	2,788,186	536,037	523,818	76,860	1,035,059	100,704	2,280,491	81.8	507,695	351,663	216,098	414,307
	6 mos.	1,954	14,488,613	2,736,028	18,415,263	3,246,157	3,429,981	433,451	6,621,533	595,859	14,367,455	78.0	4,047,808	3,108,026	2,232,125	2,038,412
Mobile & Ohio	June	1,161	1,268,134	103,798	1,455,913	225,457	304,513	53,886	523,394	46,414	1,153,661	79.2	302,252	214,806	189,664	256,076
	6 mos.	1,161	7,857,150	624,979	8,985,798	1,346,435	1,642,336	322,758	3,321,537	286,043	6,918,753	77.0	2,067,045	1,558,065	1,305,082	1,674,367
Monongahela	June	169	626,018	21,545	653,636	85,000	75,000	885	144,902	11,078	315,056	48.2	338,580	313,559	215,504	189,773
	6 mos.	169	3,711,124	156,485	3,903,111	460,000	400,000	6,312	1,019,961	60,932	1,943,145	49.8	1,959,966	1,783,270	1,183,699	1,006,414
Monongahela Connecting	June	7	.....	.....	157,102	22,614	30,529	395	66,552	3,370	123,460	78.6	33,642	25,139	25,109	33,324
	6 mos.	7	.....	.....	1,061,379	107,642	200,008	2,268	454,661	19,602	784,181	73.9	277,198	219,739	203,967	221,787
Montour	June	57	99,481	152	100,074	28,137	40,093	1,172	20,086	7,297	96,785	96.7	3,289	—1,954	32,187	31,121
	6 mos.	57	639,476	1,882	644,754	143,857	264,832	7,234	147,185	52,086	615,194	95.4	29,560	—2,468	191,003	84,225
Nashville, Chattanooga & St. Louis	June	1,259	1,374,527	323,737	2,000,692	304,178	387,123	89,673	677,643	74,753	1,540,928	77.0	459,764	389,652	346,161	227,483
	6 mos.	1,259	8,524,132	1,958,179	11,499,587	1,571,432	2,332,900	517,888	4,197,672	477,199	9,129,459	79.4	2,370,128	1,937,008	2,007,689	1,715,544
Nevada Northern	June	165	69,382	5,910	82,671	11,092	4,039	931	14,949	4,694	36,001	43.6	46,670	36,006	37,830	44,396
	6 mos.	165	394,084	37,926	475,936	75,687	29,234	5,575	94,611	27,953	234,373	49.2	241,563	193,289	197,512	182,520
Newburgh & South Shore	June	7	.....	.....	147,619	34,649	38,733	.....	63,865	4,189	141,436	95.8	6,183	—2,141	—384	13,816
	6 mos.	7	.....	.....	863,695	122,270	227,775	.....	372,856	25,248	748,149	86.6	115,546	44,365	74,190	125,360
New Orleans Great Northern	June	274	215,530	24,265	250,083	46,137	44,065	8,102	69,737	10,866	177,390	70.9	72,693	57,321	37,827	47,548
	6 mos.	274	1,374,677	141,868	1,575,779	257,360	279,183	47,487	439,699	64,518	1,083,885	68.8	491,894	392,575	275,941	286,836
New York Central	June	6,925	20,221,943	9,447,045	33,891,667	4,816,554	6,425,759	429,967	10,949,688	1,119,424	24,151,334	71.3	9,740,333	7,315,827	6,976,512	7,668,971
	6 mos.	6,925	120,888,530	47,506,499	192,432,873	25,756,960	40,022,249	2,456,602	68,168,379	7,176,235	146,215,342	76.0	46,217,531	33,239,447	31,144,609	33,201,792
Cincinnati Northern	June	244	360,843	5,490	377,016	54,661	96,294	6,525	120,075	10,450	290,780	77.1	86,236	65,667	41,521	76,701
	6 mos.	244	2,213,553	33,198	2,294,677	281,184	469,337	39,148	754,287	67,741	1,612,575	70.3	682,102	538,533	37,044	447,159
Cleve., Cinn., Chicago & St. Louis	June	2,397	5,560,083	1,432,256	7,626,452	1,074,946	1,596,592	153,565	2,712,327	264,881	5,881,912	77.1	1,744,540	1,323,396	1,205,389	1,580,923
	6 mos.	2,397	34,006,291	7,653,479	45,419,324	5,224,731	9,848,289	868,611	17,076,730	1,636,539	35,103,375	77.3	10,315,949	7,825,732	7,208,771	8,052,531
Indiana Harbor Belt	June	117	.....	.....	918,578	166,945	137,224	4,637	345,974	26,108	680,888	74.1	237,690	195,040	135,292	198,106
	6 mos.	116	.....	.....	5,658,046	847,128	871,234	29,272	2,390,407	159,457	4,295,710	75.9	1,362,336	1,089,827	896,157	931,867

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Michigan Central	June	1,855	$5,155,496	$1,897,728	$7,787,800	$992,669	$1,431,272	$134,329	$2,438,283	$251,168	$5,344,494	68.6	$2,443,306	$1,880,784	$1,912,897	$2,386,238
	6 mos.	1,855	30,682,181	9,449,319	44,506,466	4,806,737	8,390,019	751,522	14,850,761	1,574,786	30,921,859	69.5	13,584,607	10,585,878	10,428,310	11,630,966
Pittsburgh & Lake Erie	June	231	2,498,247	219,001	2,802,067	395,427	773,307	28,272	855,424	77,903	2,132,230	76.1	669,837	484,336	817,824	639,181
	6 mos.	231	14,395,787	1,374,855	16,299,236	2,233,552	5,347,195	152,182	5,384,978	483,250	13,610,285	83.5	2,688,951	1,706,328	3,891,133	4,136,630
New York, Chicago & St. Louis	June	1,691	4,146,566	174,386	4,476,923	648,280	816,207	127,268	1,533,116	151,530	3,274,640	73.1	1,202,283	933,091	764,041	516,710
	6 mos.	1,691	24,978,007	837,699	26,654,971	3,127,558	5,292,507	742,696	9,405,642	980,630	19,476,884	73.1	7,178,087	5,663,580	4,659,327	4,890,648
New York, New Haven & Hartford	June	2,175	6,504,556	4,106,539	11,852,478	1,785,546	2,314,141	90,110	3,776,480	338,378	8,472,459	71.5	3,380,019	2,869,419	2,179,120	2,058,295
	6 mos.	2,175	36,794,829	23,886,388	68,089,809	9,435,540	13,583,448	534,161	24,075,035	1,981,665	50,660,765	74.4	17,429,044	14,262,244	10,212,820	11,430,959
Central New England	June	Included in New York, New Haven & Hartford														
	6 mos.	Included in New York, New Haven & Hartford														
New York Connecting	June	20	199,940	.....	232,633	34,059	13,566	.....	56,919	1,909	106,453	45.8	126,180	88,680	77,140	89,242
	6 mos.	20	1,304,242	.....	1,486,254	149,478	82,579	.....	359,671	9,978	601,706	40.5	884,548	647,548	549,580	578,517
New York Ontario & Western	June	569	764,361	214,745	1,166,709	170,489	202,148	17,309	436,058	36,322	865,860	74.2	300,849	250,835	201,230	264,886
	6 mos.	569	3,945,307	711,874	5,649,476	764,796	1,308,376	107,156	2,681,116	213,252	5,101,542	90.3	547,934	246,252	—43,477	361,514
Norfolk and Western	June	2,241	8,677,699	613,577	9,594,654	1,286,602	1,922,183	112,269	2,407,350	219,180	5,896,909	61.5	3,697,745	2,845,317	3,084,926	3,395,985
	6 mos.	2,241	50,564,025	3,472,245	55,983,850	7,480,353	11,439,611	657,103	14,782,757	1,266,990	35,591,334	63.6	20,392,516	15,284,894	16,682,262	17,638,998
Norfolk Southern	June	931	834,076	55,378	936,707	106,450	137,777	26,064	318,077	30,487	607,697	64.9	329,010	267,261	217,214	212,476
	6 mos.	931	4,438,768	300,711	5,013,709	610,420	760,790	149,024	1,823,807	182,090	3,462,311	69.1	1,551,398	1,246,056	1,007,930	946,149
Northern Pacific	June	6,668	5,625,636	1,295,627	7,653,255	1,255,175	1,524,061	240,228	2,435,328	242,245	5,794,171	75.7	1,859,084	1,185,341	1,560,263	1,764,615
	6 mos.	6,672	31,815,314	5,716,553	41,338,867	6,659,840	8,656,345	1,261,639	15,150,729	1,489,995	33,654,620	81.4	7,684,247	3,679,077	5,752,513	7,525,551
Northwestern Pacific	June	477	349,437	189,834	594,309	113,919	77,638	7,173	219,289	19,452	437,256	73.6	157,053	116,362	103,015	166,602
	6 mos.	477	1,638,544	888,677	2,806,191	589,774	479,710	37,180	1,248,380	123,365	2,476,995	88.3	329,196	84,922	28,174	312,057
Pennsylvania Railroad	June	10,502	39,267,565	11,968,789	56,374,381	7,754,098	11,586,110	810,213	19,993,502	1,604,296	42,466,003	75.3	13,908,378	10,196,601	8,961,347	9,825,561
	6 mos.	10,502	23,391,690	69,667,358	333,672,038	42,305,590	72,658,225	4,674,890	125,349,659	9,523,696	258,840,163	77.6	74,831,875	58,551,660	51,165,065	43,701,010
Baltimore, Chesapeake & Atlantic	June	130	92,587	33,177	136,891	15,067	50,150	2,406	82,605	4,016	154,244	112.7	—17,353	—22,530	—22,453	—38,033
	6 mos.	130	414,219	142,068	594,343	68,238	243,442	10,530	447,724	20,582	790,516	133.0	—196,173	—208,321	—214,754	—207,156
Long Island	June	401	1,046,466	2,432,764	3,695,454	594,405	547,255	53,351	1,412,398	79,279	2,698,888	73.0	996,566	680,101	488,267	615,858
	6 mos.	401	5,799,850	12,020,688	19,051,169	3,153,720	3,365,464	204,747	8,304,713	517,567	15,619,894	82.0	3,431,275	2,514,474	1,500,681	1,868,916
West Jersey & Seashore	June	378	441,865	503,199	993,736	151,903	146,378	19,867	453,161	26,869	798,917	80.4	194,819	85,663	70,904	70,063
	6 mos.	378	2,517,617	2,549,730	5,320,734	911,835	972,050	99,267	2,652,550	150,566	4,789,273	90.0	531,461	304,068	230,753	308,777
Peoria & Pekin Union	June	19	22,341	1,516	143,194	29,324	14,400	1,578	63,933	8,605	117,840	82.3	25,354	—4,220	19,187	42,432
	6 mos.	19	140,969	16,268	903,814	101,147	92,553	6,822	402,251	47,363	650,136	71.9	253,678	139,104	251,092	314,125
Pere Marquette	June	2,243	3,190,857	281,903	3,708,632	602,960	829,447	65,552	1,290,603	126,265	2,907,417	78.4	801,215	574,525	490,139	729,407
	6 mos.	2,244	18,905,442	1,488,929	21,650,439	2,341,967	4,775,967	363,060	7,470,559	676,703	15,666,419	72.4	5,984,020	4,759,168	4,057,910	4,137,313
Pittsburgh & Shawmut	June	102	148,302	2,035	152,129	25,662	52,501	1,458	40,959	10,383	130,963	86.1	21,166	19,895	29,121	42,174
	6 mos.	102	783,443	26,825	823,391	126,536	301,171	9,863	246,794	58,902	743,266	90.3	80,125	73,091	134,773	242,866
Pittsburgh & West Virginia	June	92	244,332	5,625	280,714	13,692	59,989	10,748	57,092	25,201	178,611	63.6	102,103	68,107	109,052	172,450
	6 mos.	92	2,042,497	37,661	2,272,251	134,912	380,333	57,768	455,652	159,086	1,263,160	55.6	1,009,091	698,735	1,103,285	1,119,197
Pittsburgh, Shawmut & Northern	June	198	121,205	1,881	126,910	41,267	26,218	1,389	51,734	7,832	128,440	101.2	—1,530	—4,458	—15,514	22,097
	6 mos.	198	861,512	17,191	901,857	173,563	184,600	9,426	357,828	41,477	766,894	85.0	134,963	117,007	53,297	85,903
Quincy, Omaha & Kansas City	June	249	46,468	10,412	64,907	38,717	13,697	754	26,213	2,403	81,738	125.9	—16,831	—22,654	—25,650	—10,182
	6 mos.	249	262,919	78,827	383,314	181,649	78,055	4,627	171,233	15,791	450,358	117.5	—67,044	—102,247	—118,848	—105,385
Reading	June	1,139	6,304,322	705,299	7,377,742	1,247,795	1,772,095	85,029	2,774,920	227,012	6,113,968	82.9	1,263,774	919,357	1,046,867	1,549,879
	6 mos.	1,139	40,637,142	4,505,352	47,373,581	6,291,431	10,659,739	494,732	18,022,757	1,245,382	36,733,934	77.5	10,639,647	79,831,145	8,371,047	9,380,869
Atlantic City	June	161	137,503	229,955	387,919	69,629	36,416	4,026	199,149	11,618	321,024	82.8	66,895	32,655	2,353	4,968
	6 mos.	161	790,156	840,519	1,735,650	548,791	191,021	28,650	1,129,525	37,605	1,936,412	111.6	—200,762	—406,337	—574,430	—376,630
Perkiomen	June	41	103,621	4,130	110,873	18,835	6,045	112	46,629	1,228	72,897	65.7	37,976	33,789	26,218	40,374
	6 mos.	41	566,065	24,318	609,174	75,918	36,795	649	276,304	6,909	396,848	65.1	212,326	183,748	141,785	211,222
Port Reading	June	19	120,272	.....	165,245	32,706	8,101	229	67,116	5,820	113,963	69.0	51,282	35,001	—20,485	—2,727
	6 mos.	19	957,841	.....	1,279,341	186,419	48,699	1,374	449,340	16,964	702,764	54.9	576,577	472,184	60,317	109,998
Richmond, Fredericksburg & Potomac	June	117	564,061	266,805	982,567	161,402	163,225	9,077	338,872	34,135	727,240	74.0	255,327	196,977	153,091	213,205
	6 mos.	117	3,069,391	2,210,084	6,368,406	728,671	1,036,666	53,408	2,284,216	213,096	4,503,668	70.7	1,864,738	1,479,124	1,083,149	1,681,057
Rutland	June	413	306,336	80,442	501,822	105,294	109,123	10,883	196,794	14,603	438,480	87.4	63,342	39,924	44,198	42,964
	6 mos.	413	1,876,443	538,959	3,054,694	532,644	631,403	65,546	1,261,498	88,923	2,589,533	84.8	465,161	309,699	358,894	403,574
St. Louis-San Francisco	June	4,951	5,428,138	1,198,073	7,124,792	1,031,845	1,478,609	119,663	2,257,046	246,334	5,018,323	70.4	2,106,469	1,688,545	1,687,827	1,792,233
	6 mos.	4,951	31,302,370	6,909,585	41,271,208	5,620,410	8,200,426	690,749	13,887,007	1,478,557	29,521,296	71.5	11,749,912	9,443,532	9,778,950	10,254,685
Ft. Worth & Rio Grande	June	233	88,202	14,546	113,211	31,970	21,291	3,347	48,872	4,971	110,265	97.4	2,946	—1,134	—9,467	—27,363
	6 mos.	233	460,078	88,847	611,876	151,077	129,318	19,271	317,161	31,913	647,628	105.8	—35,752	—60,202	—109,755	—91,898
St. Louis, San Francisco & Texas	June	137	121,342	11,620	137,421	45,153	28,636	5,329	57,322	8,173	144,337	105.0	—6,916	—9,457	—31,876	—8,009
	6 mos.	137	900,118	81,564	1,007,735	190,083	167,426	31,214	363,999	47,369	799,294	79.3	208,441	192,588	51,785	40,574
St. Louis Southwestern	June	940	1,243,072	105,326	1,425,689	398,721	208,943	69,220	354,862	64,799	1,111,079	77.9	314,610	278,673	179,137	286,455
	6 mos.	940	7,259,834	580,248	8,301,407	1,645,519	1,309,365	381,892	2,258,618	393,263	6,054,839	72.9	2,246,568	1,972,841	1,463,868	1,866,820
St. Louis Southwestern of Texas	June	807	480,963	53,715	581,987	212,256	114,491	29,441	259,133	34,623	654,138	112.4	—72,151	—9,270	—94,744	23,995
	6 mos.	807	2,822,193	305,193	3,416,438	1,158,265	688,455	167,002	1,443,279	197,908	3,674,888	107.6	—258,450	—420,595	—98,086	—53,656

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Seaboard Air Line	June	4,300	$3,733,314	$695,169	$4,845,171	$679,944	$842,350	$214,142	$1,831,771	$207,641	$3,836,499	79.2	$1,008,672	$680,977	$699,171	$909,172
	6 mos	4,271	24,977,305	5,642,193	33,575,734	4,174,643	4,940,989	1,223,352	12,940,589	1,230,510	25,055,857	74.6	8,519,877	6,585,401	5,842,390	5,728,550
Southern Railway	June	6,771	8,791,437	2,412,422	12,156,190	1,928,037	2,290,861	254,226	3,992,297	354,000	8,900,160	73.2	3,256,030	2,460,466	2,386,782	3,135,117
	6 mos.	6,771	54,300,961	13,342,102	73,379,407	10,851,765	13,693,716	1,570,469	25,094,859	2,051,417	53,731,757	73.2	19,647,650	15,123,956	14,235,045	15,709,694
Alabama Great Southern	June	314	644,894	163,198	862,312	157,240	181,379	20,395	260,836	23,174	650,714	75.5	211,598	149,958	168,183	232,781
	6 mos.	314	3,767,704	907,027	4,994,522	858,688	996,546	123,741	1,526,351	139,209	3,688,570	73.9	1,305,952	959,128	1,111,593	1,227,790
Cinn., New Orleans & Texas Pac.	June	338	1,498,195	299,048	1,900,040	278,880	370,303	43,278	537,050	52,169	1,295,040	68.2	605,000	482,121	449,680	523,194
	6 mos.	338	8,499,170	1,877,783	11,005,955	1,716,027	2,211,249	260,794	3,275,991	313,583	7,874,759	71.5	3,131,196	2,508,455	2,343,993	2,998,819
Georgia Southern & Florida	June	401	282,321	79,734	386,427	83,929	74,446	9,239	163,096	7,794	340,454	88.1	45,973	24,413	14,338	74,794
	6 mos.	401	1,678,400	569,439	2,428,733	545,378	524,901	77,776	1,044,762	69,391	2,282,897	94.0	145,836	20,027	—76,904	554,304
New Orleans & Northeastern	June	204	355,608	77,816	465,247	70,849	81,830	12,781	142,621	18,805	331,324	71.2	133,923	94,122	60,049	83,428
	6 mos.	204	2,238,115	463,190	2,903,918	404,381	498,888	78,232	877,897	94,156	1,981,085	68.2	922,833	666,358	450,869	588,612
Northern Alabama	June	110	100,301	7,982	111,099	26,719	4,414	2,139	36,920	2,914	73,094	65.8	38,005	31,719	3,130	6,461
	6 mos.	110	631,880	48,814	697,343	126,884	25,531	14,612	223,073	16,955	406,951	58.4	290,392	255,317	107,020	100,050
Southern Pacific	June	8,928	13,603,080	3,670,907	19,025,510	2,385,896	2,921,070	392,554	6,051,010	670,073	12,738,523	67.0	6,386,987	4,732,179	4,325,091	4,629,236
	6 mos.	8,929	72,308,085	20,100,148	102,013,836	14,635,953	17,756,852	2,325,894	33,861,276	3,793,907	74,341,616	72.9	27,672,220	19,223,177	17,781,261	17,323,634
Atlantic Steamship Lines	June	...	735,740	50,812	1,009,989	17,371	212,984	14,594	619,063	60,447	924,459	91.5	85,530	82,107	84,599	173,544
	6 mos.	...	4,695,647	236,132	6,034,509	102,434	1,204,424	99,298	3,782,739	232,612	5,421,507	89.8	613,002	580,168	589,128	748,764
Texas & New Orleans	June	4,590	3,956,543	1,112,559	5,577,557	1,075,477	1,142,025	174,232	2,079,609	265,673	4,682,590	84.0	894,967	641,621	398,240	349,253
	6 mos.	4,562	25,032,665	6,039,506	33,981,518	6,642,334	7,084,567	983,201	12,911,395	1,604,876	29,331,666	86.3	4,649,852	2,937,536	1,610,119	1,263,720
Spokane, Portland & Seattle	June	554	535,985	139,243	741,363	123,310	96,737	13,156	209,737	23,149	471,077	63.5	270,286	190,814	180,515	160,747
	6 mos.	554	3,020,448	591,646	3,946,930	569,726	591,834	67,311	1,198,034	139,838	2,595,800	65.8	1,351,130	875,386	850,498	678,607
Tennessee Central	June	296	233,159	25,408	272,084	53,766	51,079	8,748	91,792	11,655	216,576	79.6	55,508	47,917	33,116	21,609
	6 mos.	296	1,375,939	147,275	1,607,930	322,099	274,663	51,825	593,209	80,784	1,321,070	82.2	286,860	253,102	157,438	110,648
Terminal Railroad Ass'n of St. Louis	June	55	.....	.....	1,042,339	192,888	90,175	2,241	402,427	21,499	712,469	68.4	329,870	237,752	315,981	348,553
	6 mos.	55	.....	.....	6,648,059	1,027,402	584,015	13,514	2,642,387	143,453	4,430,357	66.6	2,217,702	1,606,513	2,081,810	2,174,946
Texas Mexican	June	162	78,817	5,102	92,282	22,147	18,785	4,168	38,174	6,602	89,604	97.1	2,678	—3,068	—10,155	50,837
	6 mos.	162	644,739	37,023	749,644	154,723	137,093	24,560	291,516	35,454	642,869	85.7	106,775	76,029	19,462	271,302
Toledo, Peoria & Western	June	239	129,767	4,072	141,198	46,580	17,882	7,953	57,606	6,483	136,504	96.7	4,694	3,694	—10,457	—27,266
	6 mos.	243	706,843	41,064	801,159	196,079	124,234	44,948	354,866	44,006	764,115	95.4	37,044	17,925	—38,482	—113,428
Toledo Terminal	June	28	.....	.....	137,945	32,443	14,176	527	50,991	4,827	102,964	74.6	34,981	15,278	40,374	59,284
	6 mos	28	.....	.....	753,306	91,607	95,633	3,208	299,491	26,910	516,849	68.6	236,457	120,093	322,121	302,175
Trinity & Brazos Valley	June	367	108,916	8,942	123,798	42,002	35,483	5,744	72,623	12,512	160,592	129.7	—36,794	—44,072	—57,906	—84,254
	6 mos.	367	1,144,125	48,515	1,232,220	332,372	193,877	32,526	607,292	73,344	1,188,052	96.4	44,168	—133	—136,065	—386,684
Ulster & Delaware	June	128	51,142	18,983	108,210	26,502	18,445	1,725	51,496	5,153	103,321	95.5	4,889	—861	—5,485	6,423
	6 mos.	128	252,998	48,464	500,682	108,840	99,198	8,379	263,869	30,788	511,074	102.1	—10,392	—44,892	—64,763	—49,165
Union Railroad of Penna	June	45	.....	.....	965,342	129,048	206,899	161	392,633	18,058	746,798	77.4	218,544	197,407	263,138	435,393
	6 mos	45	.....	.....	5,017,995	715,664	1,246,238	973	2,389,005	80,383	4,432,147	88.3	585,848	491,711	910,037	1,353,550
Union Pacific	June	3,714	5,772,830	1,592,669	8,287,233	1,414,855	1,829,077	226,545	2,201,977	194,721	6,071,924	73.3	2,215,309	1,476,794	1,294,849	1,455,857
	6 mos.	3,714	34,451,328	7,457,535	46,378,494	6,250,406	10,341,732	1,106,440	13,348,862	1,854,299	33,865,251	73.0	12,513,243	8,219,237	7,462,275	8,800,439
Oregon Short Line	June	2,539	1,978,135	410,151	2,657,603	628,232	488,746	62,466	837,033	80,046	2,170,962	81.7	486,641	229,637	158,066	485,404
	6 mos.	2,538	12,267,161	1,968,199	15,464,764	2,832,411	2,834,206	321,093	4,780,214	709,200	11,798,325	76.3	3,666,439	2,131,813	1,757,266	2,212,213
Oregon-Wash. R. R. & Nav. Co.	June	2,237	1,597,886	365,111	2,233,353	522,024	375,145	87,981	804,930	88,140	1,904,612	85.3	328,741	138,526	25,301	517,058
	6 mos.	2,237	9,639,463	1,754,402	12,631,789	2,621,002	2,184,139	454,526	4,854,227	701,340	10,977,327	86.9	1,654,462	536,434	—65,201	990,081
Los Angeles & Salt Lake	June	1,208	1,420,008	571,180	2,249,303	444,280	429,552	82,366	653,563	63,102	1,797,397	79.9	451,906	319,421	216,309	389,767
	6 mos.	1,208	8,772,868	2,339,665	12,296,401	2,418,311	2,562,593	501,984	3,933,354	448,381	10,414,212	84.7	1,882,189	1,084,800	518,593	751,885
St. Joseph & Grand Island	June	258	188,573	12,676	220,348	65,070	45,268	3,087	90,385	10,894	214,704	97.4	5,644	—7,449	—8,740	14,929
	6 mos.	258	1,285,133	77,627	1,466,294	297,613	243,244	18,227	554,566	88,972	1,202,622	82.0	263,672	172,443	111,877	276,358
Utah	June	111	106,742	.....	106,764	15,394	36,042	329	20,985	5,389	78,139	73.2	28,625	22,141	25,163	40,693
	6 mos.	111	816,066	36	818,592	95,947	234,691	2,200	160,158	35,927	528,923	64.6	289,669	231,467	215,248	163,920
Virginian	June	545	1,608,444	45,857	1,774,657	226,593	377,472	14,579	356,091	36,795	1,002,338	56.5	772,319	622,311	675,603	778,406
	6 mos.	545	10,698,812	329,256	11,784,400	1,268,992	2,224,135	84,331	2,328,863	203,182	6,068,980	51.5	5,715,420	4,770,238	5,083,661	4,012,774
Wabash	June	2,524	4,326,181	766,191	5,523,658	1,002,213	978,663	160,775	2,051,466	191,515	4,394,917	79.6	1,128,741	848,203	601,160	771,865
	6 mos.	2,524	27,124,885	4,054,342	33,546,465	4,745,552	6,005,933	972,434	13,198,316	1,090,209	26,055,404	77.7	7,491,061	5,809,610	4,083,912	4,685 587
Ann Arbor	June	293	431,717	17,977	463,074	63,465	105,057	12,816	171,138	11,924	362,433	78.3	100,641	73,308	58,814	61,247
	6 mos.	293	2,635,926	121,314	2,839,612	316,825	596,000	73,205	1,116,567	69,800	2,168,409	76.4	671,203	521,594	418,764	419,902
Western Maryland	June	804	1,689,668	40,252	1,780,004	277,894	361,308	40,092	472,393	50,936	1,192,878	67.0	587,126	487,126	518,574	469,819
	6 mos.	804	10,650,174	248,534	11,266,082	1,689,887	2,436,238	230,470	3,283,273	274,831	7,927,004	70.4	3,339,078	2,739,078	2,854,201	2,545,645
Western Pacific	June	1,042	1,064,411	206,513	1,370,402	362,845	275,665	49,315	413,222	42,700	1,182,303	86.3	188,099	64,595	135,351	429,877
	6 mos.	1,042	5,624,246	779,587	6,820,804	1,428,915	1,544,453	261,628	2,410,197	257,708	6,031,663	88.4	789,141	46,630	474,861	1,463,787
Wheeling & Lake Erie	June	511	1,403,258	30,774	1,559,849	219,619	390,558	35,898	465,608	50,563	1,163,899	74.6	395,950	266,359	285,161	421,938
	6 mos.	511	8,633,515	191,476	9,434,603	1,148,317	2,308,930	203,393	2,901,288	285,517	6,857,846	72.7	2,576,757	1,785,060	1,790,730	1,980,706

News of the Week

(*Continued from page 307*)

The highway department hitherto has been limited in its activities in this connection to the expenditure of such sums as could be taken from the regular highway construction fund. Five contracts are now in course of completion.

Hearings are being held this month on eight projects, in six counties, Franklin, Tuscarawas, Ashland, Allen, Erie and Delaware.

Locomotive Shipments in July

July shipments of railroad locomotives, from principal manufacturing plants, based on reports received by the Department of Commerce, totaled 59 locomotives, as compared with 89 in June and 132 in July, 1926. The following table gives the shipments of locomotives for each of the seven months in 1926 and 1927:

Year and Month	Shipments				
		Domestic		Foreign	
	Total	Steam	Electric	Steam	Electric
1926					
January	126	91	11	22	2
February	163	101	22	38	2
March	162	146	11	4	1
April	151	122	12	1	16
May	140	105	14	12	9
June	159	133	11	12	3
July	132	82	20	30	..
Total (7 mos.)	1,033	780	101	119	33
1927					
January	57	16	8	31	2
February	80	69	10	..	1
March	137	84	11	42	..
April	98	72	23	3	..
May	109	77	15	13	4
June	89	63	18	8	..
July	59	35	17	7	..
Total (7 mos.)	629	416	102	104	7

British Visitors

Sir Felix J. C. Pole, general manager of the Great Western Railway of England, with a party of officers, is visiting America, having landed in New York on August 5. Sir Felix was the guest of the New York Central and the Pennsylvania in New York on August 6, and went thence to Philadelphia, Norfolk, Washington and Baltimore.

Others in the party are J. Milne, assistant general manager; J. C. Lloyd, chief engineer; W. A. Stanier, principal assistant to the chief mechanical engineer; K. W. C. Grant, general agent of the Great Western in New York City, and John Pole, son of Sir Felix. The itinerary of the party includes Chicago, Detroit, Toronto, Niagara Falls, the Thousand Islands, Montreal and Ottawa.

The party will return to New York City on August 22 and will sail for England on the 23rd.

B. of L. E. Retains Financial Advisers

The Brotherhood of Locomotive Engineers, as part of the program of consolidation and development of the various financial and business activities conducted by the brotherhood and as contemplated at the recent triennial convention, has concluded arrangements with C. H. Huston of New York and a group of nationally known financiers who have agreed to act as financial advisers of the brotherhood, according to an announcement by Alvanley Johnston, grand chief engineer. Mr. Johnston's statement added that:

"The brotherhood bank and financial institutions were founded to provide for an investing and banking service especially designed for patrons of average means. The resources of these institutions now total in excess of $100,000,000.

"Mr. Huston was formerly Assistant Secretary of Commerce under Secretary Hoover and is chairman of the Trans-Continental Oil Co.

"We are working on the formation of a strong representative board of directors for the brotherhood's Cleveland bank, the personnel of which will be announced in a few days.

"With reference to the Florida properties of the brotherhood, to the complete development of which the brotherhood is definitely committed, the board of financial trustees and myself have just concluded arrangements to meet the New York financial group at Venice, Fla., next week where the development of the properties and a further announcement of brotherhood's financial plans will be agreed upon and made public."

Legislative Freight Reductions

Legislation of the Canadian Parliament at its last session ordering the railways to reduce freight rates in the Maritime provinces has caused considerable trouble between the railways and the Maritime shippers. The Canadian National Railways, although a publicly-owned and controlled road, has been reluctant to meet all the requirements of the legislation, and the order of the Dominion Railway Board that the railways meet certain conditions of the legislation has been appealed by the Canadian National Railways and the appeal will be heard by the Board on September 6. That order relates to provision by the Canadian National of rates through the westbound "gateways" at St. John, N. B., and Ste. Rosalie Jct. (about 70 miles east of Montreal); in other words, provision for transferring at those points and at the request of shippers, consignments to the Canadian Pacific for haulage to destination.

F. E. C. Freight Train Near West Palm Beach

Traffic

The Central Pennsylvania Producers' Association has filed a petition with the Interstate Commerce Commission in the lake cargo coal case requesting that the commission require the carriers to maintain the same differential relationship in rates on lake cargo coal between the Pittsburgh, Ohio No. 8 and Cambridge districts on the one hand and the central Pennsylvania field on the other which existed prior to the commission's decision in the lake cargo coal case. The petition stated that these differentials have been widened by the reduction by the Pennsylvania of the rates from Pittsburgh, Ohio No. 8 and Cambridge without like reductions from the central Pennsylvania districts.

The Interstate Commerce Commission has issued Supplement No. 3 to regulations for the transportation of explosives and other dangerous articles. Effective November 1, "Dangerous—Empty" placards must be displayed on empty returned tank cars used for the transportation of gasoline and other light petroleum products, corrosive liquids and other products which in shipment were protected by "Inflammable," "Corrosive Liquid," "Compressed Gas" or "Poisonous" placards.

The transportation of fireworks containing yellow or white phosphorus has been prohibited, effective November 1.

Specifications have been prescribed for the construction of a tank car to carry liquefied hydrocarbon gas.

One Agent for Two Stations

The station agent of the Erie at Horseheads, N. Y., five miles west of Elmira, is to have charge also of Big Flats, five miles further west, the amount of traffic at the latter point having become so small as no longer to warrant the expense of maintaining a regular station. This change, made with the approval of the New York State Public Service Commission, is conditioned on the presence of the joint agent, or a competent assistant, at Big Flats for at least one hour in the forenoon and one hour in the afternoon of each day except Sunday, to attend to freight and express business; and the assistant must be a resident of Big Flats, so that he will be available outside of regular hours when occasion warrants. The railroad company desired to employ at Big Flats only a caretaker, but the Public Service Commission, acting on the objections of local residents, imposed the above conditions. Big Flats must be continued in the list as an agency station.

Proposed Freight-Rate Grouping in Southern Territory

Interstate Commerce Commissioner Eastman has issued a notice, in connection with the commission's investigation of freight rates in southern territory (Docket No. 13494) calling upon all parties interested

to examine the rate basis which has been proposed for the new tariffs, which are to be issued under the commission's ruling, with a view to seeing if there is any dissatisfaction with the arrangement of basing points and the grouping of small places with basing points, which grouping is for the purpose of simplifying the preparation of tariffs. The railroads propose that all towns or cities having a population of 2,000 or more, and also smaller places where found desirable, shall be made basing points; and from these points every rate will be made strictly on the principles prescribed by the commission; and smaller towns will be linked with these basing points. This grouping will make some rates a little too high and some a little too low, and the point at issue is whether this variation from the theoretical standard will work any serious discrimination or injustice.

Senator Capper Discusses Grain Rates

Senator Arthur Capper, in compliance with a request made by the farm organizations of Kansas and the southwest, has written to Commissioner B. H. Meyer of the Interstate Commerce Commission, who is conducting hearings at Wichita, Kan., in the investigation of grain rates, I. C. C. docket 17,000, part 5, saying that grain rates should be reduced rather than increased. The final level at which the rates should be set with justice to all, he said, depends greatly upon two important factors. (1) A level of rates at which the railways can earn a just and fair return and (2) the ability of the farmer or grain grower to pay and make a reasonable profit on his grain. "It will be shown," he said, "that the principal roads operating in Kansas and the grain sections of the southwest have within the last few years been putting large proportions of their earnings back into their properties until now they probably are in the best physical conditions they have been in at any time in their history.

This should permit them to apply more of their gross earnings to dividends, as for the next few years less should be required for upkeep and betterments.

"In comparison with the present desirable financial position of the roads and their well-balanced earnings, I believe the financial position of agriculture in this section is such that the farmer not only cannot afford to pay higher freight rates on his grain, but that he is entitled to decreases in such rates. A comparison of income of farmers in Kansas and the surrounding agricultural sections with that of the railroads operating in that territory, shows the earnings of the roads to be far greater than that of the farmer. The average earnings of Kansas farmers in dollars and per cent earned on capital investment for the years from 1922 to 1926, inclusive, are as follows: 1922, earned $1,235 or 2.8 per cent; 1923, earned $1,110 or 1.7 per cent; 1924, earned $1,654 or 3.4 per cent; 1925, earned $1,680 or 4 per cent; 1926, earned $1,325 or 3.5 per cent. The average earned for the five years was $1,401, or 2.94 per cent."

Foreign Railways

Swiss Electrified Lines Carry 70 Per Cent of Traffic

A total of 743 miles of the Swiss Federal Railways are now under electric operation. This includes the newly electrified section from Geneva to Rorschach via Berne and Zurich. With this addition, something more than 40 per cent of the entire Swiss Railway system is electrified and the electric lines carry about 70 per cent of all traffic. The electrification is estimated to effect the saving of 500,000 tons of coal per year.

Indian Railway Accountants Organize

A new organization in India, to be called the "Institute of Railway Accountants and Auditors" has been organized, with Sir Frederic Gauntlett, auditor-general in India, as its first president. The institute aims to provide a central organization for railway accounting officers, to elevate the standards of the profession and to disseminate knowledge on the subject. The various grades of membership in the institute are: Honorary life fellows, honorary members, fellows, members, associate members, associates, students and subscribers.

Russian Notes

Plans have been prepared for the erection of a new freight car plant at Tagil, Russia, to have an annual capacity of 5,000 box cars to cost $14,000,000 and to employ 4,570 workmen, according to the American-Russian Chamber of Commerce.

The Putiloff Locomotive Works, Leningrad, has commenced the erection of a new design of Diesel locomotive.

Locomotives are being pooled instead of assigned to regular crews, by order of the Commissariat for Railways. The order is meeting with some opposition on the part of employees but will nevertheless be retained.

A number of rail motor cars have been completed and are being placed in service on branch lines.

Car loadings averaged 26,842 per day in May—an increase of 29 per cent over May, 1926.

Six hundred tank cars designed particularly for handling heavy lubricating oils will be built by the Rostov Works.

Miscellaneous

The following reports have been received by the Department of Commerce from its agents in various parts of the world:

A bill authorizing the President of Chile to contract loans for the Chilean State Railways amounting to $31,000,000 at 6 per cent and $10,000,000 at 6½ per cent has been approved by the congressional treasury committee, according to a cable from R. C. Ackerman, Commercial Attache, Santiago.

The Kansas City, Mexico & Orient is extending its line from the town of Falomir, Mexico, to the American border at Presidio, Tex., a distance of about 70 miles. The firm of Marquez & Terrazas, Chihuahua, has the contract for building the road bed. The railroad is to traverse comparatively level country through an arid region of hard surface so the construction of the road bed presents no difficulties.

A new railway bridge on the Kiaochow-Tsinan Railway, China, was opened to traffic on May 5. The bridge spans the Cheng Yang river, about 20 miles from Tsingtao, and replaces a truss bridge that was constructed in 1901. It is 145 meters long. The replacing of the bridge is part of the railway's plan to replace all bridges gradually.

Work on electrification of the main line of the Netherlands Railway System between Rotterdam and Amsterdam is progressing satisfactorily and trial runs were made during the quarter ended March 30, between Rotterdam and Haarlem. This is the route followed by the express trains from Paris and Brussels to Amsterdam, passing through Rotterdam and The Hague. The service will be operated at first with five-car trains, three of which are equipped with motors and all connected with covered passageways. First, second, and third class accommodation will be provided with a total capacity of 322 seats and standing room for 120 passengers. It is expected later to install electric locomotives for the international trains running over the route.

Construction progress on the Lower Congo-Katanga Railway is as follows: On the southern division rail is laid up to 300 miles from Bukama; on the northern division rail is laid up to 114 miles from Ilebo-Port Francqui and if rails are received it is expected that 12 miles will be laid per month. It is expected that the junction of the two division will take place in April, 1928. The road is being constructed with grades of 112 to 115 per cent so that 400-ton trains can be hauled. The locomotives will use wood for fuel. Port Francqui, the Kasai river terminus of the road, is being equipped with electric light and water distribution and the construction of 1,450 ft. of quays will be commenced shortly, to be supplemented later by 650 ft.

The New England Shippers' Advisory Board is to hold its next quarterly meeting at Burlington, Vt., on September 22 and 23.

The Chicago Claim Conference and the Chicago Shippers' Conference have jointly formulated a plan whereby copies of destination damage reports on cars loaded by shippers in the Chicago territory will be assembled in a neutral bureau at Chicago for the purpose of studying the causes of such damages. The plan will be tried out during September, October and November, and if successful will be extended to other points.

Equipment and Supplies

Locomotives

THE BELT RAILWAY OF CHICAGO is inquiring for 5 eight-wheel switching locomotives.

PICKANDS MATHER & Co., Cleveland, Ohio, is inquiring for one six-wheel switching locomotive.

Freight Cars

THE NORTH AMERICAN CAR COMPANY has ordered 500 refrigerator cars from the Pressed Steel Car Company.

THE CORDOVA CENTRAL, (Argentina) is inquiring through the car builders for 100 all steel covered goods wagons of 35 tons' capacity.

THE READING COMPANY has ordered five air dump cars of 30 cu. yd. capacity, from the Koppel Industrial Car & Equipment Company.

THE WAGNER QUARRIES COMPANY has ordered two drop door, air dump cars of 30 cu. yd. capacity from the Koppel Industrial Car & Equipment Company.

THE MICHAEL HOFFMAN FUEL COMPANY, Bridgeport, Conn., has ordered one tank car of 10,000 gal. capacity, from the General American Tank Car Corporation.

THE EGYPTIAN STATE RAILWAYS have opened bids for 100 low side gondola cars of 30 tons' capacity. Inquiry for this equipment was reported in the *Railway Age* of July 9.

THE ILLINOIS TRACTION SYSTEM has ordered 200 composite drop bottom gondola cars of 50 tons' capacity and 50 composite drop bottom gondola car bodies of 50 tons' capacity from the American Car & Foundry Company.

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION, Chile, has ordered 100 flat cars and 40 gondola cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of July 23.

Passenger Cars

THE SOUTHERN PACIFIC is inquiring for six baggage and mail cars.

THE REDE SUL MINEIRA (Brazil) is inquiring through the car builders for six first class passenger cars.

THE NEW YORK CENTRAL has given an order for rebuilding 50 steel underframe passenger coaches, to the American Car & Foundry Company.

THE ERIE has ordered 25 all steel suburban passenger coaches from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of July 16.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 5 combination baggage and passenger gas-electric motor cars, 72 ft. long, from the Standard Steel Car Company and 5 cars of the same type, from the Pullman Car & Manufacturing Corporation. All ten cars are to be equipped with Electro-Motive Company gas electric power plants. Inquiry for this equipment was reported in the *Railway Age* of the issue of June 4.

Iron and Steel

THE PENNSYLVANIA is asking for 500 tons of steel for four bridges.

THE BOSTON & MAINE is inquiring for 240 tons of steel for various bridges.

THE READING COMPANY is inquiring for 280 tons of steel for various bridges.

THE CENTRAL OF NEW JERSEY is inquiring for 100 tons of steel for a passenger station, at Perth Amboy, N. J.

THE LEHIGH VALLEY has given a contract for 260 tons of steel for a bridge at Roselle Park, N. J., to the Bethlehem Steel Company.

THE CHESAPEAKE & OHIO has ordered 4,000 tons of structural steel for bridge approaches over the Ohio river at Cincinnati, Ohio, from the Mt. Vernon Bridge Company.

Miscellaneous

THE PITTSBURGH STEEL COMPANY is inquiring for 10 bloom cars of 100 tons' capacity.

Signaling

THE CANADIAN NATIONAL has ordered from the Union Switch & Signal Company material for a mechanical interlocking at St. James Junction near Winnipeg, Man.; 53 working levers.

THE PERE MARQUETTE has ordered from the Union Switch & Signal Company material for an electric interlocking at Wixom, Mich., where the P. M. crosses the Grand Trunk. Color-light signals will be used. The order includes one electrically operated switch movement.

THE UPPER MISSISSIPPI Barge Line Company, under the charter of the Inland Waterways Corporation, started freight barge service on the Mississippi river between St. Louis, Mo., and Minneapolis, Minn., and St. Paul, on August 6.

THE NEW FRUIT and vegetable terminal of the Boston & Maine at Rutherford avenue, Boston, in which are an auction room and other facilities for the sale of perishable goods, was opened on August 5, with a luncheon at which large numbers of the friends of the company were entertained. The new building is 600 ft. long by 90 ft. wide.

Supply Trade

The Wright Manufacturing Company, Lisbon, Ohio, has removed its Chicago office to 548 West Washington boulevard.

The **Pullman Car & Manufacturing Corporation** has let a contract to Moreno, Lemle & Lemle, New Orleans, La., for the construction of the first unit of a car wheel plant, 200 by 400 ft., in that city.

Herbert F. Adey has been appointed eastern representative of the Long Leaf Yellow Pine Manufacturers' Association (New Orleans) with office in the Grand Central Terminal Building, New York City.

W. H. S. O'Brien, formerly with the Waugh Equipment Company, has joined the staff of the **O'Fallon Company,** St. Louis, Mo. Mr. O'Brien's headquarters are at St. Louis. He will be engaged in general sales and service work among transportation companies in the southwest territory.

W. E. Day, formerly of the purchasing and stores department of the Southern Pacific, has been appointed representative of the Railway Appliance division of the **American Fork & Hoe Company,** with headquarters in the St. Clair building, San Francisco, Cal.

The Earle Gear & Machine Company, Philadelphia, Pa., has opened a district office at 95 Liberty street, New York City; **C. N. Walsh** and **George E. Barrtett** are in charge. The company also maintains a district office in charge of **William H. Allen** at 110 State street, Boston, Mass.

The Waugh Equipment Company, Chicago, has appointed the **O'Fallon Company,** Arcade building, St. Louis, Mo., as exclusive representative to handle sales and distribution of the Waugh company's various specialties to railroads and electric lines, in St. Louis and middle west section of the United States.

The Westinghouse International Brake & Signal Company has been incorporated in Delaware, with a capitalization of 1,000,000 shares of no-par stock. The new company has been organized to acquire the Westinghouse Air Brake business now operated by separate companies in England, France, Italy, Canada and New South Wales.

John A. Toleik, formerly in charge of all welding development with the American Can Company, has severed his connections with that company to become chief engineer of the **Gibb Welding Machines Company,** Bay City, Mich. Mr. Toleik's chief interest in his new position will be in the further development of the company's research department.

In connection with recent newspaper reports relative to merging the **General American Tank Car Company** and the

Pressed Steel Car Company, F. N. Hoffstot president of the Pressed Steel Car Company has issued a statement to the effect that no such proposition had ever been put up to the directors or the stockholders of the Pressed Steel Car Company.

The **Hyatt Roller Bearing Company,** Newark, N. J., has appointed the **O'Fallon Company,** Arcade building, St. Louis, Mo., its direct sales representative. The O'Fallon Company will handle exclusively the Hyatt railroad journal box and roller bearings for steam railroad and electric railway use in the central southwest territory from its St. Louis sales office.

C. G. Emil Larsson, assistant chief engineer of the **American Bridge Company,** has been appointed chief consulting engineer in charge of technical engineering and bridges, succeeding Charles W. Bryan, deceased, and **James H. Edwards,** assistant chief engineer, has been appointed chief engineer in charge of engineering forces and buildings; both with headquarters at New York.

Frank R. Meyer, Jr., district sales manager of the **Inland Steel Company,** with headquarters at St. Louis, Mo., has been promoted to assistant vice-president in charge of sheet steel sales, with headquarters at Chicago, to succeed **Walter C. Carroll,** resigned to become president of the National Association of Sheet & Tin Plate Manufacturers, and will be succeeded by **Walter F. Brumm,** representative at St. Louis.

The Electric Arc Cutting & Welding Company, Newark, N. J., announces that the alternating current patents owned by it, known as the Holslag patents and the inductive reactor a.c. patents, known as the Arendt patents, owned by the Owen Electric Manufacturing Company, Fayetteville, N. C., have been consolidated into one licensed arrangement. Under this arrangement it is possible for reputable firms to secure licenses for the manufacture of such a.c. welding equipment.

The Morton Manufacturing Company, Chicago, has concluded arrangements for the establishment of two foreign branches, one with the **Lyman Tube & Supply Company,** Montreal, Quebec, to handle the Dominion of Canada and Colony of Newfoundland, and the other with **A. & S. Ash Brothers,** a railway equipment firm at Johannesburg, South Africa. The Morton organization is also considering arrangements to ultimately provide the company with a world-wide distribution for its products.

Henry H. Straus, assistant vice-president of the Inland Steel Company, Chicago, vice-president of the Red Top Steel Post Company, Chicago, and vice-president of the Buffalo Steel Company, Tonawanda, N. Y., has been appointed vice-president of the **Inland Steel Company.** After graduating from Cornell University in 1920 he entered the employ of the Morris Paper Mills at Morris, Ill., and in 1922 resigned to become assistant vice-president in charge of the Chicago Heights plant of the Inland Steel Company, which position he held until his recent promotion.

The Bethlehem Steel Company has established three divisions of sales, each in charge of a vice-president as follows: General sales, **E. S. Knisely,** vice-president, and **Paul Mackall,** general manager of sales. Structural and plate sales, including fabrication and erection of buildings and bridges, **G. H. Blakeley,** vice-president, and **E. E. Goodwillie,** general manager of sales. Railway freight and passenger car and machinery sales, **G. W. Struble,** vice-president. In addition to the above changes **J. M. Gross** is now vice-president in charge of traffic; **H. C. Crawford** is traffic manager; **R. E. McMath** is vice-president in charge of finances and will also retain the office of secretary; all with headquarters at Bethlehem, Pa.

Obituary

Albert G. Welch, president of Edwin S. Woods & Co., Chicago, and a member of the board of directors of the Bradford Corporation, died in Chicago on August 8 from pneumonia. He was born in Chicago on June 3, 1873, and was admitted to the bar in 1894. At the time of his death he was also a member of the firm of Sims, Welch, Goodman & Stransky.

Ernest B. Perry, president and general manager of the Industrial Works, Bay City, Mich., died on August 7, after a short illness. He was born on December 9, 1868, in Prairie du Chien, Wis., and graduated from the University of Michigan in 1889 with the degree of B. S. in mechanical engineering. On July 1 of the same year he entered the employ of the Industrial Works as a draftsman and

Ernest B. Perry

erecting engineer, which position he held until 1893, when he was promoted to superintendent. In 1895 he was made manager and in 1906 he was elected vice-president and general manager. In November, 1924, he was elected president and general manager, which position he held until his death.

Construction

BALTIMORE & OHIO.—Milo P. Hanke, of Cincinnati, Ohio, has been awarded a contract for the construction of water treating plants at Newton Falls and Nova, Ohio, at a cost of $20,000.

BALTIMORE & OHIO.—This company received bids until August 12 for the construction of water treating plants at St. Joe and Albion, Ind. Bids will close on August 19 for the construction of water treating plants at McCool and Wellsboro, Ind.

BANGOR & AROOSTOOK.—This road has awarded a contract to the Phoenix Bridge Company, Phoenixville, Pa., covering the strengthening of a bridge at Presque Isle, Me., increasing the loading from Cooper's E 30 to E 60. Cost of the work involved amounts to about $40,000.

CANADIAN NATIONAL.—This company plans the construction of coaling stations of 100 tons' capacity at Drumheller, Alta., and Oyen and a 2,000-ton ice house at Prince Rupert, B. C.

CHESAPEAKE & HOCKING (Chesapeake & Ohio).—This company, the Baltimore & Ohio and the State of Ohio contemplate the elimination of a grade crossing on these two railroads south of Chillicothe, Ohio, at an approximate cost of $70,000.

CHESAPEAKE & OHIO.—This road has awarded a contract to Boxley Brothers Company, of Orange, Va., for grade crossing elimination work in connection with the construction of the bridge over the Ohio river between Covington, Ky., and Cincinnati, Ohio.

CHICAGO & NORTH WESTERN.—A contract for the construction of a 150-ton, four-track, reinforced concrete electrically operated coaling plant at DeKalb, Ill., has been awarded to the Ogle Construction Company, Chicago. This plant will replace a frame trestle and coal chute recently destroyed by fire at that point.

CHICAGO, BURLINGTON & QUINCY.—An application has been filed with the Interstate Commerce Commission by P. E. Jepson, C. L. Murry, H. G. Montgomery and other citizens of Missouri and Iowa for a certificate of public convenience and necessity requiring the Burlington to connect its branch line between Sedan, Ia., and Elmer, Mo., with its main line from Kansas City and St. Joseph to St. Louis and Chicago, by an extension of the branch to its main line near Macon, Mo.

DELAWARE, LACKAWANNA & WESTERN.—A contract has been let to F. D. Hyde, of New York, for the construction of a new passenger station at Paterson, N. J., at an estimated cost of $100,000.

LEHIGH VALLEY.—This company plans to build a bridge on its line at Roselle Park, N. J.

MISSOURI PACIFIC.—Bids will close on August 15 for the construction of a 400-

ton reinforced concrete, mechanically-operated coaling station at Gurdon, Ark.

NEW YORK, NEW HAVEN & HARTFORD.—This road has authorized the construction of a freight house and freight handling facilities at Rye, N. Y., to cost approximately $120,000.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—Bids closed on August 9 for the construction of a mill for boring, adzing, incising and stamping new ties at the Dalles, Ore. The cost of construction of the building is estimated at $13,500 and machinery, contract for which has been let to Greenlee Brothers & Co., Rockford, Ill., is expected to involve an added expenditure of $70,000.

PANHANDLE & SANTA FE.—Bids will soon be received for the construction of a brick and concrete combined freight and passenger station at Panhandle, Tex.

PENNSYLVANIA.—The Public Utility Commission of New Jersey has given this road, together with the United New Jersey Railroad and Canal Company, permission to construct a siding track at grade across Fourth street, Harrison, N. J.

PENNSYLVANIA.—A contract has been let to T. J. Foley Construction Company, of Pittsburgh, Pa., for grade elimination work at Rootstown, Ohio, and Thornburg, Pa. The work at Rootstown will cost $100,000 and at Thornburg, $50,000.

PENNSYLVANIA.—A contract has been let to the Ogle Construction Company, Chicago, for the construction of a 750-ton, four-track, electrically operated, reinforced concrete coaling station and sand handling plant at Camden, N. J. This plant will have duplicate coal hoisting equipment, two ash pits and two inspection pits.

PENNSYLVANIA.—A contract has been awarded to the Bates & Rogers Construction Company, of Chicago, for the construction of a subway under the tracks of the Baltimore & Ohio, Erie, and Pennsylvania at Forge Street in Akron, Ohio, which will cost $85,000. Another contract has been let to the Strobel Construction Company, of Chicago, for the erection of steel super-structure of a bridge at Idlewood, Pa.

ST. LOUIS-SAN FRANCISCO.—A contract for the construction of a highway subway under the tracks of this company at National Avenue, Springfield, Mo., has been awarded to the Pioneer Construction Company, Kansas City, Mo. The cost of the project, which is estimated to be $44,000, will be partially borne by the railroad.

SOUTHERN PACIFIC (San Antonio & Aransas Pass).—A contract has been let to the W. J. Harris Contracting Company, Houston, Tex., for the construction of an extension between Harlingen and Brownsville, Tex., about 30 miles.

TEXAS & PACIFIC.—A contract for the construction of a two-story office building at the engine terminal and yard at Goldsboro, La., has been let to H. F. Hinrichs & Son, New Orleans, La.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for permission to abandon that part of the road of the New Mexico Central between Torrance, N. Mex. and Willard, 36 miles and that part of the New Mexico Central's road between Kennedy, N. Mex. and Santa Fe, 21.8 miles. The applicant stated that both lines are operated at a loss and that there is no prospect that either will become self-supporting by itself or as a feeder of the Santa Fe.

BALTIMORE & OHIO.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to modify a previous application when it proposed among other things, nominally to issue $11,425,500 of 5 per cent refunding general mortgage bonds and $422,500 of Toledo-Cincinnati first lien and refunding 6 per cent bonds. The carrier explained that since the original application was filed it had been authorized to issue and sell $63,242,500 of additional common stock. Of this stock $11,430,102 will be used to reimburse its treasury for capital expenditures to December 31, 1926, with respect to which the aforesaid bonds were to be nominally issued.

BESSEMER AND LAKE ERIE.—*Bonds.*—The Pittsburgh, Bessemer & Lake Erie has applied to the Interstate Commerce Commission for authority to issue $3,557,000 consolidated first mortgage 5 per cent bonds from time to time as may be required for retiring by exchange an equal amount at par of bonds of the Pittsburgh, Shenango & Lake Erie.

CANADIAN PACIFIC.—*To Sell Stock.*—The Canadian Pacific has announced the offer of $32,500,000 ordinary stock to stockholders of record on August 19, on the basis of one new share for each eight shares of stock now held. Payment is to be made in three installments of $50 each on September 29, December 17 and February 15, 1928. The rights to subscribe will expire on September 29. The company will also issue $5,000,000 ordinary stock to be offered for subscription by officers and employees of the company at $150 a share, to be paid in monthly installments. The total of $37,500,000 represents one-half of the increased stock authorized by the stockholders at their annual meeting in May, 1926.

CHESAPEAKE & OHIO.—*Files Brief on Merger.*—This company filed with the Interstate Commerce Commission on August 8 a brief in support of its application for authority to acquire control of the Erie and Pere Marquette. The brief presents a recapitulation of the testimony and argument presented on its behalf in the course of the proceeding and in conclusion refers particularly to the opposition of the minority stockholders. The brief stated:

"It is a striking circumstance outstanding in this case that the minority which is opposing this application introduced but one witness and the testimony of that witness consisted in the main of exhibits made either from the record of the commission or the exhibits already filed in this case.

"Not a single member of the committee went on the stand. Not a single contributing stockholder appeared to testify in favor or support of the petition of intervention filed by the protestant minority committee. The consequence is that the committee is presenting to the commission a defense, if it may be so called, critical rather than constructive and this defense is more than overborne by the clear, convincing and affirmative proof of public interest and the reasonableness and justness of the considerations, terms and conditions."

The applicant's brief stated that the minority has not fulfilled the duty, of minority stockholders, as pronounced by the Commission in a recent case, to lay before it "fully and frankly all facts relating to their holdings."

"The commission cannot say when the minority acquired its stock, or for what purpose, or how it is held, or whether it is a good faith ownership or not, or what is the purpose of the committee here, or who are Bamberger Brothers, Bryan, Kemp & Co., W. H. Goadby & Co., Kay & Co., Livingston & Co., Moore, Leonard & Lynch, Otis & Co., E. A. Pearce & Co., L. F. Rothchild & Co., Scott & Stringfellow, Thompson & McKinnon, J. R. Williston & Co., among the largest of the minority stockholders listed, and what is their interest and how the stock in their names is held. Are they stockholders interested in the future of the property or are they brokers interested in market manipulations? The decisions of the commission require full disclosure. That disclosure has not been made.

"The points arising in this proceeding, under the statute and under the decisions of the commission, have now been fully considered and the evidence in support of them placed before the Commission in statements and by reference. It is urged that the affirmative proof is clear and convincing and that the applicant has successfully borne its burden and established the fact that it should be given permission to acquire by stock purchase the control of the Erie and the Pere Marquette.

"It is, therefore, respectfully submitted that the expressed desire of the holders of 810,437 shares of stock, in the public interest and upon conditions, terms and considerations just and reasonable, should not be thwarted by the holders of 126,498 shares of stock and that the petition of this applicant should be granted, awarding to it the authority to acquire by stock acquisition control of the Erie and Pere Marquette."

CHICAGO & ALTON.—*Trackage Rights.*—The Toledo, Peoria & Western has been ordered by the Interstate Commerce Commission to permit William W. Wheelock and William G. Bierd, as receivers of the Chicago & Alton, to use its tracks between Washington, Ill., and Peoria, upon the terms and provisions of the contract of September 2, 1895. The order stated that the total compensation ultimately to be paid shall be upon such terms as may be agreed upon, or in the event of a disagreement, as the Commission may after subsequent hearing find to be just and reasonable.

The emergency order was issued by the Commission on August 9 following receipt of a complaint from the receivers of the Chicago & Alton, advising the commission that the Toledo, Peoria & Western had notified them that it proposes to terminate the contract of September 2, 1895, as of August 16 next. Under the contract the receivers are paying $20,500 a year to the Toledo as compensation for the use of the tracks. The latter has demanded an increase, which the receivers of the Alton claim to be excessive and negotiations have failed to result in agreement.

CLEVELAND UNION TERMINALS COMPANY.—*New Directors.*—C. L. Bradley, vice-president of the New York, Chicago & St. Louis, has been elected president and a director of the Cleveland Union Terminals Company to succeed O. P. Van

Sweringen, who resigned as president, but remains a director. Other new directors are C. S. Millard, vice-president of the Big Four; W. L. Ross, president of the New York, Chicago & St. Louis; R. E. Dougherty, engineering assistant to the president of the New York Central, and W. N. King, counsel for the New York Central.

DELAWARE & HUDSON.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for permission to abandon its Honesdale branch, extending from Lookout Junction, Carbondale, Pa., to Honesdale Junction, Pa., 27.72 miles. The line is operated at a loss.

GREAT NORTHERN PACIFIC.—*Unification Application Assigned for Hearing.*—The Interstate Commerce Commission has assigned for hearing at Minneapolis on October 3, before Director C. D. Mahaffie of its Bureau of Finance, the joint applications of this company and of the Great Northern, Northern Pacific and Spokane, Portland & Seattle for authority for the acquisition of control of the other three companies by the G. N. P., and its applications for authority to issue securities and assume liability in respect of securities of the three companies.

GREAT NORTHERN PACIFIC.—*Intervention in Merger Proceedings.*—The Inter-state Commerce Commission has permitted the Minneapolis, Red Lake & Manitoba, which operates a 33-mile line from Redby, Minn., to Bemidji, to intervene in the proceedings relative to the merger of the Great Northern and Northern Pacific.

W. H. Bremmer, receiver of the Minneapolis & St. Louis, has announced that a petition will be filed seeking permission for that road to intervene.

The Chicago, Milwaukee & St. Paul has already announced that it will oppose the application.

ILLINOIS CENTRAL.—*Equipment Certificates.*—This company has applied to the Interstate Commerce Commission for authority to issue $8,460,000 of 4½ per cent equipment trust certificates, the proceeds of which will be used to defray part of the cost of equipment costing $11,296,936. The issue will be sold to the highest bidder, subject to the commission's approval. Certificates will be payable in 15 annual installments of $564,000, beginning July 1, 1928.

LEHIGH & NEW ENGLAND.—*Equipment Certificates.*—This company has applied to the Interstate Commerce Commission for authority to assume obligation and liability for $750,000 of 4½ per cent equipment trust certificates, the proceeds to be applied to the purchase of equipment costing $921,-321. The certificates will be sold under competitive bidding to the highest bidder and will be payable in 15 annual installments of $50,000 a year, commencing October 1, 1928.

LOUISIANA & ARKANSAS—*To Redeem Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue a 5 per cent promissory note for $2,600,000 to provide for the redemption at maturity September 1 of $2,-595,000 of the carrier's first 5 per cent mortgage bonds.

LOUISVILLE & NASHVILLE.—*To Abandon Spur.*—This company has applied to the Interstate Commerce Commission for permission to abandon both operation and the road of that portion of its Acton branch in Alabama, extending beyond the Paramount Coal Company's operation near Helena, to Acton, 5.93 miles. The reason for abandonment is the permanent suspension of coal mining operations by the Alabama Fuel & Iron Company at Acton.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability with respect to $477,000 Clarkson Coal Mining Company equipment gold notes, series A, 1921. These securities were issued to the Haskell & Barker Car Company, Inc., now a part of the Pullman Car & Manufacturing Corporation. The new notes are to be known as series N and will bear interest at 5 per cent in place of the 7 per cent formerly paid.

NEW YORK CENTRAL.—*Stock Issue Approved.*—This company has been authorized by the Interstate Commerce Commission to issue $38,325,000 of capital stock to be sold at not less than par. This announcement was made by the commission on August 9, prior to issuance of a formal report on the company's application. The company announced on June 29 that the new stock, which is equivalent to 10 per cent of the amount at present outstanding will be offered to stockholders of record August 10 at $100 a share on the basis of one share of new stock to each 10 shares of stock now held.

NEW YORK, NEW HAVEN & HARTFORD.—*Hearing on Stock Issue.*—This company's application to the Interstate Commerce Commission for authority to issue 490,367 shares of 7 per cent cumulative preferred stock has been assigned for hearing August 19, in New York before Director Charles D. Mahaffie.

PERE MARQUETTE.—*Stock Dividend.*—This company's application to the Interstate Commerce Commission to issue $9,-009,200 of common stock for distribution as a 20 per cent dividend upon outstanding common should be denied, Examiner A. C. Devoe recommended in a proposed report made public August 4. Pointing out that the surplus of the applicant which is represented by capitalizable assets is $6,844,561, the commission's examiner stated that "considering the financial structure of the applicant and the purposes for which surplus should be accumulated, the amount of invested surplus is insufficient to justify distributing all or any part of it to the stockholders as a stock dividend." The examiner stated further that the granting of authority to issue stock for distribution as a dividend prior to the finding of the final valuation of its properties would not appear to be compatible with the public interest, in view of the fact that the tentative valuation of the applicant's properties, plus additions and betterments to April 30, 1927, amounts to $111,000,000, while the net book investment in road and equipment is $127,767,345. The applicant's capitalizable assets are figured in the examiner's report at a total of $143,922,561 and its capital liabilities at $137,078,000.

SOUTHERN PACIFIC.—*Valuation.*—The proceeding with respect to the tentative valuation of the properties comprising the Southern Pacific system has been assigned by the Interstate Commerce Commission for hearing commencing October 15 at Washington, before Examiners Marchand and Brinkley.

WABASH.—*Suit for Preferred Stock.*—The Willoughby Company and the Girard Trust Company, both of Philadelphia, have filed a suit at Ft. Wayne, Ind., claiming that the earnings of the railroad have been such that the holders of Class A Wabash preferred stock are entitled to a total of 16 million dollars in back dividends which were earned but not paid. Wabash has been paying 5 per cent dividends on its preferred A stock since May, 1925, but no dividends have been paid on the common. The preferred A is non-cumulative and there is a provision that after the company has paid the dividends at the rate of 5 per cent on the preferred B and common, the preferred A stock is entitled to the same amount of dividends in excess of 5 per cent that may be paid on the common.

Average Price of Stocks and Bonds

	Aug. 9	Last week	Last year
Average price of 20 representative railway stocks..	117.88	121.26	97.89
Average price of 20 representative railway bonds..	94.68	94.44	91.27

Dividends Declared

Boston & Albany—2 per cent, quarterly, payable September 30, to holders of record August 31.

Buffalo, Rochester & Pittsburgh—Common, 2 per cent; preferred, 3 per cent; both payable August 15 to holders of record August 9.

Canadian Pacific—Common, 2½ per cent, quarterly; preferred, 2 per cent, semi-annually, both payable October 1 to holders of record September 1.

Maine Central—1 per cent, quarterly, payable October 1 to holders of record September 15; preferred, 1¼ per cent, quarterly; both payable September 1 to holders of record August 15.

New Orleans, Texas & Mexico—$1.75, quarterly, payable September 1 to holders of record August 13.

New York, Chicago & St. Louis—Common, 1¼ per cent, quarterly; preferred A, 1¼ per cent, quarterly; both payable October 1 to holders of record August 15.

Valuation Reports

The Interstate Commerce Commission has issued valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates, as follows:

Tentative Reports

Rio Grande Southern.....	$3,172,800	1919
San Diego & Arizona.....	10,130,000	1921
Toledo Terminal	2,486,890	1917
Union Stockyards Co. of Omaha	1,447,155	1919

Final Reports

Big Sandy & Kentucky River	$95,000	1918
Pueblo Union Depot.....	425,600	1916
Saratoga & Encampment....	631,173	1919
Owasco River	133,287	1917
Santa Fe System (used property)	579,057,598	1916

Railway Officers

Financial, Legal and Accounting

J. A. Ackroyd, secretary of the Copper Range, with headquarters at Boston, Mass., and **John M. Wagner,** purchasing agent, with headquarters at Houghton, Mich., have in addition been appointed assistant treasurers.

James B. McDonough, Jr., assistant district attorney for Arkansas and Oklahoma for the Kansas City Southern, with headquarters at Ft. Smith, Ark., has been appointed secretary and treasurer of the Arkansas Western, with headquarters at the same point.

Operating

O. W. Tuckwood, traffic manager and auditor of the Trona, with headquarters at Trona, Cal., has been appointed general manager, with headquarters at the same point.

C. A. Maxwell, trainmaster on the Kansas City, Mexico & Orient, with headquarters at San Angelo, Tex., has been appointed assistant superintendent, with headquarters at the same point. **R. L. Davis** has been appointed trainmaster at San Angelo, succeeding Mr. Maxwell.

R. N. Gardner, chief clerk in the operating department of the Pacific Lines of the Southern Pacific, at San Francisco, has been appointed office manager in the office of the general manager and the first assistant general manager of the Facific Lines at the same point.

J. F. Alsip, assistant superintendent of the Fargo division of the Northern Pacific, with headquarters at Staples, Minn., has been transferred to the Tacoma division, with headquarters at Tacoma, Wash. Mr. Alsip will be succeeded by **Don S. Colby,** assistant superintendent, with headquarters at Billings, Mont. **Thomas Summers** has been appointed trainmaster at Pasco, Wash., succeeding **Oscar Revling,** who has been transferred to Spokane, Wash.

F. E. Nicoles, superintendent of the Eastern division of the Chicago, St. Paul, Minneapolis & Omaha, has been appointed assistant to the general manager, with headquarters at Eau Claire, Wis. **H. B. Congdon,** trainmaster, with headquarters at Spooner, Wis., has been appointed assistant superintendent of the Western division, with headquarters at St. James, Minn., succeeding **F. E. Fuhrman,** who has been transferred to the Eastern division, with headquarters at Eau Claire, Wis. **C. D. Stockwell,** assistant superintendent, has been appointed superintendent of the Eastern division, to succeed Mr. Nicoles. **F. J. Taylor,** chief train dispatcher, Nebraska division, has been appointed trainmaster, Eastern division, with headquarters at Spooner, Wis., succeeding Mr. Congdon.

Fred M. Hair, who has been appointed superintendent of the Charleston division of the Southern, with headquarters at Charleston, S. C., was born on September 4, 1886, at Blackville, S. C. Mr. Hair was educated at the graded and high schools of Blackville from 1892 to 1902. He entered railway service in 1903, with the Southern, as clerk in the freight office at Blackville, and from 1904 to 1906 he was employed as telegraph operator, yard clerk and agent at various stations on the Columbia and Charleston divisions. From February, 1906, to September, 1910, he was dispatcher at Charleston and Rock Hill, S. C., and from 1910 to 1920 he served consecutively as chief dispatcher at Rock Hill, S. C., Charleston, S. C., and Charlotte, N. C. On June 20, 1920, he was appointed trainmaster at Charlotte, which position he held until the time of his recent appointment as superintendent of the Charleston division.

Traffic

Clinton Woodring has been appointed traveling freight agent of the Missouri-Kansas-Texas, with headquarters at Seattle, Wash.

G. F. Allen has been appointed general agent of the Seaboard Air Line, and **M. D. Boyd** has been appointed commercial agent, both with headquarters at Gainesville, Fla.

L. R. Wheat, chief clerk in the office of the general passenger agent of the Gulf, Colorado & Santa Fe at Galveston, Tex., has been appointed assistant general passenger agent, with headquarters in the same city.

L. R. Everett, division freight and passenger agent of the Coast lines of the Atchison, Topeka & Santa Fe, with headquarters at San Bernardino, Cal., has been appointed assistant general passenger agent, with headquarters at San Francisco, Cal.

The headquarters of **H. N. Clarke,** general southwestern agent of the Kansas City, Mexico & Orient, have been moved from Ft. Worth, Tex., to Dallas, and **N. S. Mickley,** general agent, with headquarters at Dallas, has been transferred to Ft. Worth.

Mechanical

Charles Campbell has been appointed mechanical engineer of the New York Central and the Ottawa & New York, with headquarters at New York City.

B. Pendleton has been appointed general foreman of the Carleton Place shop of the Canadian Pacific, with headquarters at Montreal, in place of **F. Stewart,** transferred.

Charles Furness has been appointed master mechanic of the Portland division of the Boston & Maine, with headquarters at East Somerville, Mass., to succeed John W. McVey, resigned.

E. C. Roddie, master mechanic on the Illinois Central, with headquarters at McComb, Miss., has been appointed superintendent of shops, with headquarters at Paducah, Ky., a newly created position. **J. N. Chapman,** general foreman in the locomotive department, with headquarters at New Orleans, La., has been appointed master mechanic, succeeding Mr. Roddie.

Engineering, Maintenance of Way and Signaling

M. H. Straughan, superintendent of the Murfreesboro-Nashville Southwestern, with headquarters at Murfreesboro, Ark., has been appointed chief engineer, with headquarters at the same point.

Purchases and Stores

B. W. Griffith has been appointed general storekeeper of the New York Central and the Ottawa & New York, with headquarters at West Albany, N. Y.

Obituary

Charles Logan Stone, retired passenger traffic manager of the Missouri Pacific, who died on August 1, was born on June 14, 1866, at Cincinnati, Ohio, and entered railway service at the age of 16 as a clerk in the treasurer's department of the Cincinnati, Hamilton & Dayton at Cincinnati. He spent the next eight years with the C. H. & D., in various clerical capacities, including that of chief clerk in the general passenger department, and on July 30, 1890, he was appointed assistant general passenger agent of the Chicago & Eastern Illinois. In January, 1891, he was advanced to general passenger agent, becoming general passenger agent of the Louisville & Nashville in November, 1900. Mr. Stone was appointed passenger traffic manager of the Missouri Pacific on August 1, 1907, with headquarters at St. Louis, Mo., a position he h ld continuously until his retirement in July, 1926.

THE SEABOARD AIR LINE, carrying out its plans announced last winter, when the Florida advertising trains were touring the country, has this week sent out three teams of lecturers—three men each—with motion picture outfits, who are to spread knowledge of Florida—its opportunities for agricultural and other enterprises—throughout the middle-west and the New England and Middle states.